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METHOD OF DIRECTING THE WORK OF GOVERNMENT EMPLOYEES

HEARINGS

BEFORE

THE COMMITTEE ON LABOR

HOUSE OF REPRESENTATIVES
U.S.
SIXTY-FOURTH CONGRESS
FIRST SESSION

ON

H. R. 8665

A BILL TO REGULATE THE METHOD OF DIRECTING THE WORK OF GOVERNMENT EMPLOYEES

MARCH 30, 31, APRIL 1, AND 4, 1916

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METHOD OF DIRECTING THE WORK OF GOVERNMENT EMPLOYEES.

Committee on Labor,
House of Representatives,
Washington, D. C., March 30, 1916.

The committee met at 10.30 o'clock a. m., Hon. Edward Keating (acting chairman) presiding.

Mr. Keating. Gentlemen, the committee will be in order. This meeting was called for the purpose of granting a hearing on H. R. 8665, introduced by Mr. Tavenner. This bill, as you know, has been favorably reported, but the acting clerk of the committee telephoned the members of the committee and arranged for this hearing.

STATEMENT OF MR. JAMES A. EMERY, COUNSEL NATIONAL ASSOCIATION OF MANUFACTURERS AND OTHER ORGANIZATIONS, WASHINGTON, D. C.

Mr. Emery. Mr. Chairman and gentlemen of the committee, with the permission of the committee I should like to incorporate the bill as part of my remarks, in order that you may appreciate the objections addressed to its form.

Mr. Keating. There will be no objection to that.

[H. R. 8665, Sixty-fourth Congress, first session.]

A BILL To regulate the method of directing the work of Government employees.

Whereas certain executive departments are installing in their respective establishments new systems of shop management, known by the generic term of "scientific management," which have for their purpose the attainment of the maximum efficiency from both plant and workmen; and

Whereas a stop watch is used in timing workmen while at work to ascertain the maximum amount of work possible for the most capable man in a given time and making this the "standard time" in which work must be done, and by a system of premiums and bonuses, together with disciplinary measures sufficiently severe to enforce the system, this "standard time" is the speed to which all workmen must eventually attain if they are to retain their employment; and

Whereas experience has shown that the American workman by his exceptional celerity performs about twice the work performed by the manual worker of other countries, with the concomitant condition that the ratio of accidents here is from three to four times as high as in other countries; and the tendency of so-called "scientific management" through the above timing and bonus features will be to further aggravate the accident disabilities and mortality aforesaid and reduce the workman to a mere mechanical, instead of a social and moral, relation to his work, and, moreover, are unnecessary to secure adequate efficiency of labor; and

Whereas by a stop-watch time study you maye be able to determine the time in which a piece of work can be done, but you do not thereby determine the time in which it ought to be done: Therefore

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any officer, manager, superintendent, foreman, or other person having charge of the work of any employee of the United

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States Government to make or cause to be made with a stop watch or other time-measuring device a time study of any job of any such employee between the starting and completion thereof, or of the movements of any such employee while engaged upon such work. No premiums or bonus or cash reward shall be paid to any employee in addition to his regular wages, except for suggestions resulting in improvement or economy in the operation of any Government plant.

SEC. 2. That any violations of the provisions of this act shall be deemed a misdemeanor and shall be punished by a fine of not more than $500 or by imprisonment of not more than six months, at the discretion of the court.

Mr. EMERY. I represent, in opposition to the pending measure, the National Association of Manufacturers, composed of some 4,000 members operating manufacturing establishments in many of the States in the Union, and a great number of associations who are particularly opposed to this proposal, a list of which will be supplied to the committee.

I desire first of all to express on behalf of those whom I represent and myself our appreciation of the privilege which the committee has given us of appearing in opposition to this measure. As I understand it, no hearings have been held upon the pending bill at this session of Congress, but I was informed that Mr. Tavenner, the author of the measure, had made a statement to the committee concerning it, but as it was not reported, I am not familiar with the attitude assumed by him in support of the proposal; I shall therefore detain the committee but a very few moments with what I have to say, preferring to ask your attention to the testimony of gentlemen whose experience entitles them to speak with peculiar authority upon the principles of so-called scientific management, which is the subject of attack in the pending measure.

The bill that is before you is a highly penal statute, and it undertakes to make criminal and to punish by fine and imprisonment acts which in themselves are certainly of an innocent character, and which either must indicate a malicious intent or must result in an end so injurious to the public welfare that in the judgment of this committee it has been necessary to attach, even in the employment of these methods by officers or employees of the Government, the penalty of fine and imprisonment.

What is it that is penalized? The thing forbidden by this measure is the use by any officer or person having charge of the work of any employee of the Government of the United States of a stop watch or other time-measuring device for the purpose of making a time study of the job of any Government employee between the starting and completion of it, or of the movements of that employee while engaged on such work. The payment of any premium or bonus or cash reward is forbidden under penalty of six months' imprisonment or $500 fine as a maximum, except for suggestions resulting in improvement or economy in the operation of the plan.

Mr. DENISON. Right there, the bill reported out had a slight amendment.

Mr. EMERY. I have not seen that, of course.

Mr. DENISON. There was an amendment inserted there which in substance reads, "for the purpose of fixing a service standard of the employees."

Mr. EMERY. You mean that no premium, bonus, or cash reward is to be paid for the purpose of fixing a standard?

Mr. DENISON. No stop watch or other device shall be used for the purpose of fixing a service standard of the employee. That was inserted in the bill as reported out.

Mr. EMERY. Where would that language go in?

Mr. DENISON. After the word "work," change the period to a comma in line 9. I will state further that the bill was amended in three particulars, as I remember. In the first place, all the whereases were stricken out, and on line 7, on page 2, insert in lieu of the word "service" the word "system."

Mr. EMERY. Time-measure system?

Mr. DENISON. Yes; instead of the word "service," and in line 9, on page 2, the period after the word "work" was stricken out and the comma inserted in lieu thereof, and after the comma the following words: "for the purpose of fixing a standard of service requirements for such employees." In that form the bill was favorably reported. All of the whereases were stricken out. The introduction of the bill still remains. The recital still remains. I do not know that these amendments change the bill except they define and limit it in a sense, and simply prohibit the use of those stop watches and other timing systems being used for the purpose of fixing a standard of service requirement.

Mr. EMERY. As we view it the changes do not substantially affect the purposes of the measure or its effect upon the application of engineering science to industrial production. The exclusion of the preamble is, of course, merely the exclusion of what may be considered as argumentative as distinguished from the penal language of the statute itself, so I shall assume, for the purpose of argument, that the preamble supplied at least the chief argument of the author in support of the statutory suggestion comprehending the body of the bill.

Mr. DENISON. I made a motion to strike those preambles out because I did not think they had any business in the bill. I thought they would be stricken out on the floor of the House anyhow.

Mr. EMERY. I can of course understand the preamble has no business in a statute. It merely prefaces the bill just as an argument, so you may at once have a legislative proposal and the argument to support it in one statement.

One striking provision of the measure to which the attention of the mind inevitably turns is the exception from the prohibition of the payment of any premium, bonus, or cash reward in favor of any "suggestion resulting in economy or improvement in the operation of any Government plant." By implication the exception leaves it open to the Government, or to the officer representing the Government, to pay a cash reward or a premium or a bonus for any suggestion resulting in improvement or economy of the plant if made by an employee, while, of course, in the same breath it forbids the doing of certain acts which, in the practice and experience of those charged with the superintendence and direction of the Government plant, have been presumed and, as they believe, demonstrated to contribute to improvements and to economy in the operation of the plant.

It seems to us that, assuming the preamble to be an argument on behalf of the measure and to substantially state what, in the absence of any other record, I must assume to be the brief of the proponents of the bill, that such assertions are predicated, with the exception of the first paragraph, on gratuitous presumptions that are unproven and unprovable. We deny absolutely that scientific management, understood as it is and not as it is represented to be, uses a stop watch for the purpose of timing workingmen to ascertain the maximum amount of work possible for the most capable man in a given time, or to make this standard time in which work must be done, or by any system of premiums or bonuses, together with disciplinary measures sufficiently severe to enforce such standard time as the speed at which all workmen, or any workman, must eventually attain. We deny that "experience shows that the American workman, by his experience, his exceptional celerity, performs twice the work performed by the manual workers of other countries, with the concomitant conditions that the ratio of accidents here is from three to four times as high as in other countries," or that the tendency of so-called scientific management or of time studies or of bonus features tends "to aggravate the accident disability and mortality aforesaid, and reduce the workmen to a mere mechanical, instead of a social and moral, relation to his work," and are unnecessary to secure adequate efficiency of labor. And we deny especially that "by any stop watch or time study you are able to determine the time in which work can be done, and do not thereby determine the time in which it ought to be done."

With respect to the number of accidents charged, I respectfully call your attention to the uncontradicted assertions of the Chief of Ordnance having charge of the work of the Government depot, that the percentage of accidents in Government plants among those working under the premium system is less than those engaged in day's work. That statement has been reiterated by Gen. Crozier in his public testimony, and I have never seen any statement of fact to refute it.

I furthermore beg to call your attention to the fact that so far as any testimony before your committee is concerned, and so far as any investigation made by this committee or any committee representing it, there has been no condemnation of any system or of any time study or of any premium or bonus method in operation in the only Government plants in which time study and premium payments have been in operation, that at Watertown since 1909.

I observed from the testimony of Gen. Crozier that he has frequently pointed out that while the very able subcommittee of this body which investigated this matter very thoroughly in 1911 and 1912, when the subject was first brought here to your attention, when making investigation of the Watertown plant, did condemn practices which it believed did not arise out of scientific management, but which were apprehended but not found by the committee to exist, either as a part of the system or as a fact of operation in the Government plant, and which Gen. Crozier has repeatedly stated in his testimony, if they did exist, would have been condemned by the Ordnance Department as quickly as they would be by the committee, as well as by all just and intelligent men.

So that it seems to us that the testimony before your committee, so far as we have been able to find it in condemnation of a speculative possibility or of abuses that might creep into a system, are apprehensive, but no committee or subcommittee of this body has found as a matter of evidence that they exist.

Mr. DENISON. It was represented to this committee here when this matter was up that those things did exist.

Mr. EMERY. You mean to this committee in the hearing on this bill at this time?

Mr. DENISON. Yes.

Mr. EMERY. Was there any record kept of that testimony?

Mr. DENISON. I do not know anything about that.

Mr. EMERY. I found no testimony in connection with the matter before the committee.

Mr. NOLAN. I find plenty of testimony to that effect in the hearings held before the Sixty-third Congress.

Mr. DENISON. It was understood that we should consider that hearing in the Sixty-third Congress as before this committee.

Mr. NOLAN. The statement was also made here that this was brought to a head in the Watertown Arsenal by a strike, which was investigated by a subcommittee of the Committee on Labor, and that they went back to work at the request of the War Department.

Mr. EMERY. I assume, Mr. Nolan, that was the investigation of 1911 and 1912?

Mr. NOLAN. That is the investigation you have referred to.

Mr. EMERY. Well, Gen. Crozier has recently stated—this is a very recent statement—in an address delivered before the Philadelphia School of Commerce and Accounts——

Mr. NOLAN. Gen. Crozier also appeared before this committee and his testimony is printed, and at the same time men from the Watertown Arsenal were here and told of the conditions that existed at the Watertown Arsenal. Gen. Crozier also appeared before this committee and admitted, in answer to a question of mine, that he never gave men in the Watertown Arsenal the same consideration in the old day-wage system as he did under this so-called scientific-management system and gave no reason whatever for the discrimination. They would allow only 10 men out of all the first-class machinists to enter the first class but would admit 100 per cent of the employees there under the premium-and-bonus system to first class.

Mr. EMERY. I trust the committee will distinguish between an objection aimed at the philosophy of a system and one aimed at its administration. The argument there seems to be that the system was so good that everybody wanted to share in it, not everybody——

Mr. NOLAN. The question is not that the men are not entitled to enjoy it, or prefer to enjoy it, but Gen. Crozier admitted, in answer to a question of mine, that he did not allow them to go into the first class and gave no reasons whatever for it. It is in the testimony taken before the Sixty-third Congress.

Mr. EMERY. Of course, what this bill attempts to do is to prevent that time study, so the time study must be assumed to be bad in itself, otherwise it would be remarkable that any committee would make an otherwise innocent act a criminal one. If it was a bad thing in itself in connection with the performance of Government work, then it should be made a criminal act generally.

The position of the gentlemen who appear before you to-day is that they are interested in this matter, and their interest is one which at first may appear remote and indirect, yet is very intense and direct, not merely as citizens of the United States interested in the economic and efficient operation of Government plants, and particularly at a time like this when preparation for military and naval preparedness is occupying attention and when efficiency in Government establishments is a thing to be especially sought, but these gentlemen represent both in the manufacturing world and in the engineering profession the intensive study of the application of engineering knowledge and skill to the conservation of human energy and the promotion of efficiency in industrial production. To them scientific management is a labor-saving device. It represents, as they believe, the furthest progress that has yet been made by an application of knowledge, skill, professional study, and experience to the doing of something which has certainly been the prime effort of the human race since the beginning; to so develop, so multiply human power through the tools which the human hand and the human mind can devise, use, and direct that there shall be a constantly increasing ratio between a given exercise of human energy and the amount of production resulting therefrom. The great distinction between barbarism and civilization, materially speaking, is a distinction based on the ever-increasing production which the machinery of civilization in every form, not merely that of mechanical appliances, supplies.

Mr. Nolan. Is not that just exactly where the quarrel comes? It is not against the introduction of labor-saving machinery or labor-saving devices, but it is applying the stop watch and other time-measuring devices to the human element involved.

Mr. Emery. Very well, I shall not undertake to enter into an argument on that matter with you, Mr. Nolan, because those gentlemen who have made those features of efficiency measure a life study will testify with much more authority than I.

Mr. Nolan. The reason I bring that up at this time is that you were just touching on that point.

Mr. Emery. I am laying down an ultimate principle. I could reply to that, of course, by saying that the human factor directs the machinery; the human factor is the directing force in every human operation. You gentlemen think nothing whatever of the application of the stop watch in the practice of gunnery, where a gun crew point a gun and hit a target, the two elements of time and accuracy being essential. Naval officers work with watch in hand on the deck of ship to direct that fire, not with any thought of pressing the human act to its top speed, but with the idea of ascertaining by analysis not only the time in which a thing can be done and can be best done, but, by dividing it into its elements and ascertaining how best to do it, to eliminate the waste human motion. Human time is the most valuable thing any of us possess.

Mr. Nolan. You will agree, of course, that there is no comparison between gun practice and a man working 8, 10, or 12 hours a day 300 days a year or longer?

Mr. Emery. I think the comparison is to the great advantage of the application of any system that conserves human energy in the factory as against the sporadic burst of speed involved in a gun trial.

Mr. Nolan. Which is sporadic?

Mr. Emery. Yes; of course it depends on circumstances of the battle.

Mr. Cooper. May I ask a question here?

Mr. **Emery.** Yes; certainly.

Mr. **Cooper.** This provision which says, "no premiums or bonus or cash reward shall be paid to any employee in addition to his regular wages," would that cover a private establishment that was manufacturing supplies for the Government?

Mr. **Emery.** Not in the form in which it is now drawn, of course.

Mr. **Cooper.** The reason I ask you, there is one firm in the city in which I live, they employ union men there, they work them eight hours a day, and I noticed in the papers some time ago that the Government was talking about having this firm manufacture shrapnel shell casings for them, and that the company that operates this manufacturing industry had offered an inducement to the employees in the shape of bonus to try to turn out more shell casings every day. I was wondering whether this would have any effect on that establishment or not if they were making Government munitions.

Mr. **Emery.** It would have a serious effect on them if they were using such methods in a private establishment and Congress were to condemn them in a public establishment, because I insist, and will cheerfully admit, so far as we are concerned, that if a time study and a premium payment is a bad thing in a Government establishment, it is a bad thing in a private establishment, and if it is a good thing in a private establishment it must be a good thing in a Government establishment. If it is predicated upon an advance of human knowledge that applies the highest professional skill, experience, and learning to the improvement of efficiency in production it is a good thing. Now if this is a bad thing for Government employees it is a bad thing for private employees, and if these things are condemned by Congress, the public will naturally say, and will properly say, that scientific methods applied to production is a thing that ought to be condemned in private employment because it is condemned in public employment. I do not discuss the legal side of this, because I think there are certain difficulties in applying such a measure as this to private employment.

Mr. **Cooper.** The reason I asked you this question was because this firm, the William Taught Co., engineers and manufacturers at Youngstown, Ohio, a very good firm with their workingmen, in fact they voluntarily give their workmen an 8-hour day and pay them, I think, higher wages, or as high as paid in any part of the country. As I said, I was wondering whether this would work any hardship or not on that establishment there in the city of Youngstown.

Mr. **Emery.** I say it works in an indirect way, as I see it. The terms of this bill apply only to persons having charge of the work of Government employees. Of course, a man is not a Government employee when he is working in a private establishment for a private owner, although he produces for the Government. If this applied to the person directly——

Mr. **Cooper.** That is what I wanted to find out.

Mr. **Van Dyke.** Along your line of argument, how do you explain the situation that exists at the present time where on Government contract work they are supposed to work only 8 hours a day, while usually the shops run 10 hours a day. If it is a good thing for private employees to work 10 hours a day, why not have the 10-hour Government service; and if it is a good thing for the Government shops to run 8 hours a day why do not the private employees work only 8 hours a day?

Mr. EMERY. It does not follow that because the Government is not as economical in the operation of a plant as a private employer that it is a good thing for the private employer to imitate the Government.

Mr. VAN DYKE. Do you contend this is economical for private employers?

Mr. EMERY. I contend more than that, if I can ever get to that point. I intended to make a very brief statement and turn you over to witnesses who can speak with so much more authority than I. I do, however, want to point out to this committee one of the principal objections, and many of these I do not care to dwell upon because they will be discussed by men who will speak with greater right and experience than I can. But in its essence, this is what is so seriously objectionable in this whole proposal. We believe, gentlemen, that you are penalizing efficiency and penalizing it at a time when efficiency is of more worth to the American people and of greater necessity than ever before in their history, both from the standpoint of military and industrial self-defense. We believe that this measure by penalizing those things which human knowledge, professional study, and skill has developed and applied with surpassing success to production for the benefit, as we assert, of employer and employee and of the general public, because of the saving which flow from it, is penalizing professional knowledge and progress. You are making the engineer who applies his talent and skill to the study and application of engineering science to industrial production, a criminal when he exercises it. You are saying to the Government official who undertakes to exercise his skill and knowledge for the benefit of the Government and the people who compose it, and who, as a result of his experience acquired from these studies, applies his knowlegde for the purpose of improving the condition of the Government employees and decreasing the cost of governmental production, a criminal when he improves the public service.

You say to the engineering sciences, "If you pursue to the logical end the deductions of your knowledge and apply your experience, you are a criminal." You are penalizing efficiency, you are encouraging waste, you are supporting the very tendencies that ought to be antagonized and destroyed in American life.

If it is true that this system results in injury to the workmen, then this system ought to be abolished. If it results in benefit to the workmen, it ought to be sustained. But we respectfully submit to this committee that before they penalize innocent acts the value and benefit of which we can demonstrate to any committee by overwhelming testimony, not merely from engineers, not merely from employers, but you should hear the testimony of some of the hundreds of workmen and workwomen who are operating under this system in various parts of the United States and who will give their testimony here under any conditions you may wish to make.

Mr. DENISON. Right there I want to make a statement that so far as I, myself, am concerned, and I think others take the same view of it, it was on the theory that it was injurious to the individual workman to apply the system and not beneficial. So far as I am concerned that was the question involved.

Mr. EMERY. Of course the gentleman can see that obviously no man wants to establish in his plant a system injurious to his workmen. Why, if he were the most degraded brute, he would be destroying himself by his own selfishness.

Mr. DENISON. Excuse me for interrupting you again, but it was not contended that any one would purposely injure an individual, but the contention was made to me, or in my presence, that in the application of this system they took the highest standard as a standard, the highest results as a standard, and that in the ultimate application of the system the tendency was to destroy the vitality of the workman.

Mr. EMERY. I say that is utterly denied.

Mr. DENISON. That was the theory presented to me; that was the theory on which I favor the bill. Now, if I can be convinced otherwise——

Mr. EMERY. I know the popular misapprehension of scientific management. I think it has been misunderstood by people sincerely deluded, and perhaps by others desirous of misrepresenting it, because this system does increase human production. It does increase human capacity to produce and to produce with the least exercise of effort, and if it does that there are those who will oppose it, because there has been an age-long fight against every tool and every machine and every tendency that has undertaken to mechanically increase production. Samuel Arkwight hid his loom. The very father of textile progress was followed by mobs because it was feared by the suspicious workingmen of his day that it meant depriving the hand loomer of work for all future time. You can read to-day the resolutions of the men engaged in carrying passenger traffic, on the Hudson River, who expressed themselves as opposed to the steamboat which Fulton invented. You can read to-day in McMaster's History of the United States, the opposition expressed to the first steam railroads by the stage driver, and if we are to oppose the advance of human science and human knowledge and the application of human experience because it tends to increase production on the mistaken theory that there is only a given amount of work to be divided among mankind, and not that the man carries in his own person the sole fund out of which he is to pay his way in life, there can be no progress materially, for without a continually increasing efficiency, not only on the part of labor but especially on the part of the directing forces of capital, progress ceases.

Mr. DENISON. Right there is the very meat to the whole proposition. They did not appear here in opposition to this on the ground that it increases production, but it was thought, or so represented at least, that any system, although it does increase production, if it does so at the expense of the human machine it is not a good thing although it does increase production. What do you think of that?

Mr. EMERY. I accept it absolutely. If this were a method the effect of which was to increase production at the expense of the human being who participated in it, it is a bad system.

Mr. DENISON. That was the question in my mind that was involved in this whole controversy.

Mr. EMERY. On the contrary, we intend to show you gentlemen that the purpose and effect of this system, as it is in actual operation in hundreds of private plants in this country, is to save human energy, to show every man how to do his work in the best way, by submitting his operation to the study of experienced and skilled engineers. For there is a distinction between the men who do the work and the men who plan the work; that it is the application of what may be called engineering science to industrial production; and it provides that when an operation is begun it has been predetermined in every step what shall be done, and the relationship between the material, the human element, and the mechanical has been extablished all the way through.

We do not forget, we will readily admit, that like every human science and every human application of knowledge or skill or power it is capable of abuse. There is not anything good that is not capable of abuse. Government itself is capable of abuse, and the history of mankind has shown its constant abuse more than any other great power, yet we can not do without government. Knowledge has been abused, yet the world can not live without knowledge. Skill has been abused, yet the world can not exist without skill.

If it be said on the other hand that this result or that result is undoubtedly increasing the skill of unskilled men, so that unskilled men can do the work that skilled men did before, that is an advance in human knowledge and human science. If we could discover any way to eliminate disease from the world, would we argue that disease ought not to be eliminated because doctors would be deprived of their livlihood? If we could get along without lawyers, could my profession make an argument against the improvement which did it? Anything human knowledge can lend to the human race to properly increase its efficiency or its productive capacity, has improved and benefited all of the human race, because I believe you can not define prosperity in any other way than by describing it as an abundance of commodities fairly distributed among those who produce them, and there can not be any abundance unless there is increased production.

Mr. KEATING. Can you state whether or not scientific shop management takes into consideration how long a man can live speeding up to his highest capacity?

Mr. EMERY. There is an implication, of course, in your inquiry, Mr. Chairman, that indicates that you believe that scientific shop management undertakes to speed a man up to his highest capacity.

Mr. KEATING. I believe it does.

Mr. EMERY. We are trying to offer you evidence to the contrary.

Mr. KEATING. My experience with it leads me to believe that. When you put a stop watch on a man, you——

Mr. EMERY (interposing). You are considering the stop watch to be used solely to determine how fast they can go.

Mr. KEATING. Then set the pace for the others.

Mr. EMERY. That is precisely what the system does not do. We utterly deny it. That is a matter we desire to give you testimony upon.

Mr. KEATING. Of course, you speak theory and book knowledge. You have no practical knowledge as to what your condition would be after working a month at highest speed?

Mr. EMERY. I am offering the testimony of the gentlemen who not only direct time studies but who have worked under them, and we are ready to offer you the testimony of many people who do work under them. I tell you again, Mr. Chairman, we do not deny that any system is capable of abuse, but because a man can say here and there abuses exist, that may be evidence for its reform, but not for its abolition. Under any system of daily pay, under any system of piece work, under any 6, 8, or 10 hour day, there is the same possibility. That is not eliminated by eliminating time studies, because I think we shall be able to demonstrate to you that the purpose of time study is not to ascertain how fast a man can work, what his maximum speed is, and then keep him at it until exhausted and worked out. If that is what it means, it ought to be damned, and every witness here will agree to that.

Mr. KEATING. I do not know that they mean it, but I am convinced that is the ultimate result.

Mr. EMERY. Then you apprehend a fear of it in the end?

Mr. KEATING. From my own experience.

Mr. EMERY. It was feared that when we got the mechanical loom, that we were going to do away with the men who worked with the hand looms.

Mr. KEATING. That argument does not apply.

Mr. EMERY. It was feared that when we got a machine for making shoes that the shoemakers were going to lose their living. If we are going to that argument, we must give up the thrashing machine and go back to the flail; we must give up the sewing machine and go back to the needle and thread.

Mr. DENISON. That involves a displacement of human labor, a spreading out of human labor. I think there is a distinction there. I do not think any of us would or could argue against scientific displacement of human labor if it could increase efficiency and time production. But the question this bill involves is the speeding up and the increasing of the amount of work an individual can do, rather than the displacement of human labor. Your illustrations have to do rather with the displacement of human labor.

Mr. EMERY. Those particular illustrations, of course, were directed to another matter. I do not want to take the time of this committee further. I have trespassed far more than I desired, because much more important witnesses than myself will be presented to you. But I wanted to outline this position and make it plain, and I trust you gentlemen recognize, and I am sure you do, that if this is a bad thing in Government management, it would be a bad thing in private management, and if it is a good thing in private shops it must be a good thing in Government shops.

And it certainly is the duty of the Government not to discourage and not to penalize, but to encourage, approve, and promote efficiency rightly understood, and any attack upon a thing which in itself promotes that efficiency, not at the expense but at the conservation of energy, is a thing which this committee ought not to condemn, but a thing it ought to encourage and approve.

Mr. COOPER. May I ask you one question?

Mr. EMERY. Yes, sir.

Mr. COOPER. We have a firm in the city in which I live which pays a bonus every year. I think this year they paid about half a million dollars bonus to their employees. Do you think a bill of this kind would have a tendency to do away with that bonus in private establishments?

Mr. EMERY. It does away with it in public establishments; there is no question about that.

Mr. COOPER. Do you think ultimately it would reach into private plants?

Mr. EMERY. The terms of the bill do not reach private plants, but by its example it does.

Mr. NOLAN. You know there is not such a parallel case, where the Government itself pays a bonus at the end of the year, as stated by Mr. Cooper.

Mr. EMERY. There is not now, but there is nothing in the future to prevent it, providing this committee does not prohibit it, and put the man in jail who suggests it or does it.

Mr. NOLAN. The only thing which will prohibit it is that the Appropriations Committees of Congress do not look with much favor on those payments.

Mr. COOPER. Here is what I had in view. If it be a violation of the law for the Government to do that, it would not look very well for a private establishment to do it, would it?

Mr. EMERY. If the Government says it is a thing to be condemned; if the Government says a man ought to be put in jail, being an officer of the Government if he, as your former bill says, recommends the payment, or as this bill says, pays or promises a bonus other than wages, then certainly it is a bad thing in a private establishment, but, of course, it goes on in private establishments, and this would tend to discourage it.

If the committee believes that the man who pays a cash bonus to an employee at the end of the year is a man who ought to be made a criminal, that ought to remain there.

Mr. KEATING. Is that statement quite fair? Congress, we presume, wants to enforce the provisions of this law.

Mr. EMERY. Yes, sir.

Mr. KEATING. It does not want any public official to evade the provisions of this law. A public official who seeks to evade the will of Congress is to be punished for evading his instructions from his superior officers. That has nothing to do with what may be done in private establishments. It is simply a method by which Congress undertakes to enforce its instructions to the employees of thee Government.

Mr. EMERY. Why does Congress undertake to do it, Mr. Keating?

Mr. KEATING. Because Congress undertakes to eliminate this particular thing, this practice, in Government plants.

Mr. EMERY. If it is a bad thing for an officer of the Government to pay a cash bonus at the end of the year to stimulate a man to perform his work, why is it not bad a thing for a man in a private plant?

Mr. KEATING. If you do it under conditions which affect the body of the employee, his physical well-being, his mental well-being, then it is a bad thing.

Mr. EMERY. Whatever your reason for doing it, if it is a bad thing for a man to do it in a public establishment, why is it not equally a bad thing in a private establishment?

Mr. KEATING. That is true.

Mr. EMERY. Of course, that is apart from the time study. This is a separate proposition.

Mr. KEATING. But this has to do with Government work.

Mr. **Emery**. Surely.

Mr. **Keating**. And at times it has been suggested that Government officials seek to evade the regulations laid down by Congress.

Mr. **Emery**. Of course, it throws us back always on the original proposition, that the thing itself either is a good thing or a bad thing. It either ought to be encouraged or discouraged. It either ought to be penalized or approved. If the payment of any kind of bonus or premium is a thing that ought to be penalized in a public establishment, then the payment of a bonus or premium ought to be discouraged in a private establishment.

Mr. **Denison**. I think that situation——

Mr. **Emery** (interposing). Here is a perfect parity between the conditions of production.

Mr. **Van Dyke**. The people whom you represent, do they take the same stand for the same reasons in opposing this bill as they did when they opposed the right of Government employees to appeal to Congress and to organize?

Mr. **Emery**. The association that I represent never opposed the right of Government employees to appeal to Congress.

Mr. **Van Dyke**. We had a little hearing about five years ago before the Civil Service Reform in the Committee on that very subject, the right of Government employees to organize, and under section 6 of the appropriation bill of 1912, known at the time as the Lloyd bill, and was afterwards incorporated in that appropriation bill. Probably my memory needs jogging, but if I remember rightly, you appeared before that committee opposing the Lloyd bill?

Mr. **Emery**. I did, Mr. Van Dyke.

Mr. **Van Dyke**. As representing——

Mr. **Emery**. I appeared and opposed it on the ground that we ought not to permit organized unions for the purpose of coercing the Government by threat of strike. I take that position to-day as I did then.

Mr. **Van Dyke**. That did not imply forcing the Government by strike.

Mr. **Emery**. As the bill was then drawn it implied it; but to my recollection it was clearly shown that not only had there been strikes, but, as Mr. Morrison put it at that time, there was no reason why, if one man desires to "resign" and exercises that right, that many men could not exercise the same privilege and effect a wholesale resignation of Government employees for the purpose of securing from the Government concessions by what was nothing else than a strike.

Mr. **Van Dyke**. The Government employees made the statement at that time that they did not believe in a strike, and they have never struck since the time they were organized.

Mr. **Emery**. This bill is predicated, as the gentlemen say, on an apprehension, and my argument is predicated on the very serious apprehension that the testimony supported that belief, but at this point, with your permission, I should like to present these other gentlemen.

Mr. **Nolan**. Your organization is composed of 4,000 members?

Mr. **Emery**. Four thousand members, manufacturers.

Mr. **Nolan**. Largely running manufacturing establishments?

Mr. **Emery**. Substantially all.

Mr. NOLAN. Do you know what percentage (I presume it is a question pretty hard for you to answer), but do you know what percentage of the members of your association has adopted the policy of scientific management?

Mr. EMERY. That would be a very difficult question to answer. I should say, generally speaking, from my experience with the membership, that there is hardly a plant in which the principle behind scientific management is not more or less in operation, and I would say that it was successful and that its employees' relation with the management were good almost in proportion to the adoption in whole or in part of the principle.

Mr. NOLAN. That is it, in whole or in part. Do you know how many of the establishments have applied the stop-watch and time-measuring element of the so-called scientific management system?

Mr. EMERY. I could not say that, Mr. Nolan, but the practice is general, and let me say there I do not want to repeat again the very remark I have made about the misrepresentation of the use of that, because quite apart from the fact of dealing with the human element in the production you must remember that the employer is undertaking all the time to ascertain cost. He wants to know all the time what it costs to produce his commodities, and the element of time in the labor operation as an element of cost is of a very important character. Mr. Hurley, of the Federal Trade Commission, is at the present time engaged in an endeavor, on behalf of the Trade Commission, to convince the business men of the United States that they need a far more efficient system of cost accounting and that they must know what every item of production costs, and that until they do that they are not in a position to do intelligent business. So he says he wants efficient cost accounting with the time element considered, while at this end of it you are forbidding the thing he says we must have.

Mr. NOLAN. You could not give us any idea, though, in applying the principle of scientific management to the establishments, how many of them have applied the stop watch?

Mr. EMERY. Other gentlemen who come after me can speak on that.

Mr. NOLAN. Do you know anything about a movement which has been started in opposition to this bill; a general movement, sending out circulars and form letters opposing this measure and asking people to forward their protests to Congress?

Mr. EMERY. I do not know of any particular movement. I know of a number of organizations and I know of a number of individuals who feel an intense interest in it.

Mr. NOLAN. Do you know anything about a boom that has been started for that purpose?

Mr. EMERY. I do not know what you may have in mind, Mr. Nolan. I know there are a number of movements. I mean by that various associations that are interested in this matter, associations of manufacturers, are doubtless calling it to the attention of their members.

Mr. NOLAN. I mean to the public generally, indiscriminately, whether manufacturers or business men, asking them to protest?

Mr. EMERY. There has been so much talk about it, and some of these gentlemen here can probably tell you about some aspects of that. If you can specify in any way as to any one particular circular I will tell you at once whether I know of it or not. I am not undertaking to avoid an answer to your question, but I simply do not know the particular movement you refer to.

Mr. NOLAN. There are two gentlemen that have sent out letters asking contributions to the expenses of a committee of 10 to oppose legislation antagonistic to——

Mr. EMERY. Who are they signed by?

Mr. NOLAN. One by Mr. W. B. Richardson, 42 Wall Street, the other by Mr. Henry R. Towne, 49 Wall Street.

Mr. EMERY. Mr. Henry Towne is on my right, and Mr. Richardson is also present in the room.

Mr. NOLAN. We shall be glad to get that information from them. One further question, Mr. Emery: Have you read about all of the reports of investigations conducted into scientific management?

Mr. EMERY. I have been generally familiar with them ever since they began.

Mr. NOLAN. Have you read the report of Prof. Hoxie?

Mr. EMERY. His last report?

Mr. NOLAN. Representing the Federal Commission on Industrial Relations, the final report?

Mr. EMERY. Yes; I have read his book.

Mr. NOLAN. I mean the report made to the Commission on Industrial Relations by Prof. Hoxie, Mr. Frye, representing organized labor, and Mr. Valentine, representing the scientific management experts.

Mr. EMERY. Mr. Hoxie's report had not been made to the Federal commission at the time. He filed a complete report since then and it has been published in the form of a book.

Mr. NOLAN. The official report is contained in the final report of the Commission on Industrial Relations, pages 209 to 237.

Mr. EMERY. That is not the complete report, Mr. Nolan.

Mr. NOLAN. It is their complete report to the Commission on Industrial Relations. Whatever is written outside of that was because they were confined to 24 pages.

Mr. EMERY. They published a very elaborate and interesting book, from Appleton & Co., within seven months.

Mr. NOLAN. This is the official report to the Federal commission.

Mr. EMERY. It was obviously the minority of the committee.

Mr. NOLAN. It was approved by the whole committee and so stated. I mean by the committee appointed to deal with this question.

Mr. EMERY. I mean by the committee on industrial relations, it was approved by a minority of that committee.

Mr. NOLAN. Mr. Valentine was picked from among those recommended by the scientific-management experts.

Mr. EMERY. Picked by whom?

Mr. NOLAN. Selected by Prof. Hoxie.

Mr. EMERY. I know he represented the employers generally; he was so-called, but I do not know what his qualifications are as an expert.

I want to present Mr. Henry R. Towne. He is an experienced manufacturer, an engineer widely known throughout the United States and one who has given a very great deal of time to the study of scientific management.

STATEMENT OF HENRY R. TOWNE, OF THE YALE & TOWNE MANUFACTURING CO.

Mr. TOWNE. Mr. Chairman and gentlemen of the committee, I may say at the beginning that I am interested in this subject as a manufacturer, a manufacturer of over 45 years' experience, during the greater part of which time I had been a student of the subject of efficiency and production, long before the present term of scientific management or efficiency engineering had been adopted, but with clear recognition of all that those terms involved and implied.

I may mention also that I am authorized to appear here as the representative of the National Association of Manufacturers, of which Mr. Emery is the counsel, and of the Merchants Association of New York, of which I had the honor of being president for some six years. These bodies have all studied this subject at one time or another, as have many other of our organizations, both industrial and civic, because of the intimate relation between human efficiency and the results of that efficiency as measured in business of every kind. It is a matter which touches our national interests in every direction and in every sense, not merely in industry and in commerce, but in economics, broadly and nationally, in the sense that we are to meet in competition increasingly in the future the other industrial nations of the world.

This bill prohibits specifically two acts, the time studies and the payment of a premium or bonus.

Now, what is a time study? Have you had occasion to think of it? As Mr. Emery has pointed out, labor is one of the component parts of cost, and knowledge of cost is essentially the good conduct of business of every kind, whether mercantile or manufacturing. The merchant knows his cost easier because he pays so much for his goods, adds the overhead expense of his business and figures his sales. With manufacturers, on the contrary, the problem is vastly more difficult and intricate.

The three great components of cost are labor, material, and overhead or expense account. The ratio of those three varies in different lines of industry. On the average, I think they are pretty nearly equal, but in some that I know of, the labor is much larger than either of the other two. It is rarely less than the third. Therefore, it is proportionately important for the manufacturer and for the commodity of which he constitutes a part, that he shall have knowledge of the cost of his product.

Mr. DENISON. Right there, will you pardon an interruption? The bill was amended, as I understand it, so as not to exclude the right to use time-saving or time-measuring devices to ascertain the cost of production. The bill is not aimed to prevent that, but to prevent the use of time devices for speeding up and fixing standards of service of the employees.

Mr. TOWNE. I am coming to that.

Mr. DENISON. That is the reason the amendment was inserted in the bill.

Mr. TOWNE. If the purpose and result of this system were to do what your question implies, speed up the employee to his physical and mental detriment, I would be an earnest opponent of it. I know, not from reading the hearings or investigation, but from personal experience for a number of years in the plant of my company at Stamford, where we employ some 5,000 people, I know that the contrary is the fact, that there is no such result.

In the ascertainment of cost, and incidental to that in the fixing of compensation for labor, time is the fundamental or vital factor. We recognize that in the old system of compensation, where men were paid by the day or week or hour, time was inevitably the factor there; you had to keep an account of their time. But in modern industry, in all of the industrial countries, and increasingly, the tendency is to get away from payment by time just as far and as fast as we can, to payment by the piece, or its equivalent, whereby the relative efficiency of the different workers is recognized and properly compensated. Now, to do that, the element of time at once becomes the fundamental factor, and you have got to observe it. The stop watch is only one of the many time instruments. The in-and-out clock is a thing which is used, has been used for 100 years, probably—certainly within my lifetime of 50 business years, everywhere, yet that is a time-measuring device just as much as the stop watch is.

Mr. Nolan. You do not believe this bill would prohibit the time clock, do you?

Mr. Towne. Not at all; it would not, but logically it should. It either should prohibit both or accept both.

But the time measure is only one of the elements in this; to ascertain the efficiency of labor and the cost of labor other devices are used. For example, the counter or the scales for weighing. Many machines are operated with an automatic counter attached to them which keeps the record, because the operation is so rapid they could not be reported otherwise, which shows the output per day or per hour, and that is a time study just as much as the use of a watch.

Now, all of these are factors for enabling the adjustment of compensation to be made scientifically, more accurately, and more justly than it can be by any process of guesswork or rule of thumb.

Under the old system of piecework, as it began to supersede the simple daywork, the adjustment of piece rates was a constant source of friction and of irritation and of injustice either on one side or the other, because the rates had to be based originally on guesswork, in the absence of recorded data, and afterwards upon the experience acquired under the rates first adopted. Under that system the inevitable tendency of the workman, if he found that his piece rate was an easy one at which, if he let himself go to his full limit, he could largely increase his earnings, he had before him the apprehension that thereupon the employer would cut his piece rate, as was done repeatedly, and in many cases justly. So that there was a clash or conflict of interests between the two parties to the transaction.

The new system, which is one of the elements of so-called scientific management, on the contrary implies this: That the employer and the employee together, not always, but sometimes the employer alone, for reasons I will explain later, make a scientific investigation of the thing to be done, of the existing methods of doing it, of the elimination of loss and waste motion in those methods, of the modification of those methods, if they involve unnecessary and extreme human effort, in order thereby to determine ultimately what is the best and easiest way of accomplishing that particular operation and the time in which it can be comfortably done, and thereby fixing the piece work on a basis, time one factor, and the other factor rate of wages per hour, which that class of operatives are fairly entitled to at the current rates.

That does not touch the bonus question, which I will come to afterwards. But I do want to emphasize, Mr. Chairman and gentlemen, the fact that now for the first time in this adjustment between the employer and the employee have we got a basis that is not merely scientific and accurate, but which is just; a rate which is just to both parties, which gives the workman the intended and agreed-upon compensation of what he can do in a fair day's work, and which assures him that the rate, having once been fairly adjusted, will be maintained indefinitely.

In most of the shops where scientific management is in use, the piece rates, as you will learn from other gentlemen who will testify before you, the piece rates once ascertained in this accurate way, are announced to be permanent to the operatives, and they are encouraged and go ahead and make what wages they can or what wages they please at these rates with the certainty that they are not going to be penalized if they succeed in making large wages.

Another factor as to the stop watch. It has been implied here that it consists, necessarily and always, in the manufacturer standing with his watch in hand alongside the operator and timing him as to this or that operation. That is true in some cases; necessarily true where the operation, for example, is the operation of a paper machine, a machine costing $60,000 to $80,000 and occupying a space twice as long as this room, and where, obviously, work of experiment and investigation must be made on the machine. But when you come to the little operations and the little industries in little metal work, in shoemaking, or the use of the sewing machine, a great deal of this experimenting is not done in the presence of the operator at all, because he is not needed, it is not desirable to interrupt or interfere with him. It is done in an experimental room with those familiar with the art and industry, and with sufficient experience and skill in it to make these tests and experiments correctly and intelligently.

Mr. Van Dyke. Do they not take an operator into that experimental room?

Mr. Towne. Not necessarily.

Mr. Van Dyke. Who performs the labor?

Mr. Towne. The experts who are employed for that purpose, who get a greater understanding and skill as to how these things should be investigated than any casual operator could.

Mr. Van Dyke. Is it not a fact they do employ, if in a shoemaking establishment, that they do employ a shoemaker?

Mr. Towne. Not necessarily.

Mr. Van Dyke. To get results—they do not employ a shoemaker?

Mr. Towne. Oh, they employ shoemakers, if you call them such. They are operatives on machines. Not one of them could make a shoe if he tried to.

Mr. Van Dyke. I am talking about operatives generally, employees of that establishment.

Mr. Towne. Yes; but not necessarily employed in this experimental room. I am not in the shoe industry, and I only speak from general knowledge or hearsay; but in my own industry our chief products are locks and hardware, and yet some of the men who conduct this experimental work are not what we would call lock makers.

Mr. KEATING. They are, I understand, experts?

Mr. TOWNE. Skilled mechanics.

Mr. KEATING. And employed for that particular kind of work?

Mr. TOWNE. And usually men of higher mentality, if you please, and have had better early opportunities in life and have a clear understanding, therefore, how work of this kind should be done scientifically and studied to attain the best methods of doing that work and the time in which it should be accomplished.

Mr. VAN DYKE. They are picked men?

Mr. TOWNE. For that purpose. They could not go out in the shop and do as much work at the machines as many of the operators.

Mr. VAN DYKE. Do you say it is only in these two instances that the stop watch is used in timing the individual work of the men?

Mr. TOWNE. In what instances?

Mr. VAN DYKE. You spoke of paper making.

Mr. TOWNE. I spoke of that as an illustration. The same thing would be true of a very large lathe, where it would be impossible to have that in the laboratory for experimental purposes and where you could not move the material; but when you speak of a machine, some not weighing more than that book, a small, inexpensive laboratory may be fitted up and used for that purpose.

Mr. VAN DYKE. Do they use a stop watch on mechanics who do not work by a machine?

Mr. TOWNE. In the laboratory?

Mr. VAN DYKE. No; I mean in the shop; in foundries, for instance?

Mr. TOWNE. Yes; they would in a foundry, because there you can not transplant the equipment into the laboratory.

Mr. VAN DYKE. Then they do time the movement of individuals?

Mr. TOWNE. The stop watch is used constantly and largely on men actually at their work.

Mr. VAN DYKE. In the foundry the principle is absolutely so; is that not a fact?

Mr. TOWNE. I should say yes, in most of the foundry operations. And operatives in many of the plants where scientific management is in practice are constantly beseeching the management to put the stop watch on their work in order to bring it under the new system and give them the benefits of it.

Mr. VAN DYKE. Let me ask you right there, Mr. Towne, who is delegated to use the stop watch, the efficiency engineer or some ordinary man, who probably has no knowledge of the trade at all?

Mr. TOWNE. In some cases it is by what you speak of as the efficiency engineer, brought in from the outside, because the owners of a plant have had no previous experience in it. In a plant where the system has been in use for many years, as in my own, where it has been in use now nearly 10 years, we have men who have become experts in the work and who make these observations for us, are employed for that purpose.

Mr. VAN DYKE. What I want to get at is this: The efficiency engineer is a very highly paid man. That is, the salary he receives is considerably greater than the ordinary working man receives?

Mr. TOWNE. Yes, sir.

Mr. VAN DYKE. When they put a number of those men in do they put a number of efficiency engineers, or put what they call time-study or stop-watch men, who are not efficiency engineers but only are supposed to time the movements of the individuals?

Mr. TOWNE. They do either or both.

Mr. VAN DYKE. Which is the most prevalent?

Mr. TOWNE. In a small establishment and where the range of work covered is small, one man may do everything. In a large establishment, as for example, in ours, when Mr. Taylor first came to us to start this work he had one high-priced assistant, Mr. Barth, and under him three or four, and, ultimately about ten assistants, clerks, and operators and others, and the work was distributed.

Mr. VAN DYKE. Not necessarily mechanics or men that understood that particular line of business?

Mr. TOWNE. The clerks did not because they had only clerical work to do. The men who made studies of productive work were all of them trained as engineers or mechanics.

Mr. VAN DYKE. The stop-watch men?

Mr. TOWNE. Those who used the stop watch, yes. Just in passing I should like to point out this fact, that without this system when a new job is taken in, and in most lines of business, and especially in the metal trades, new products are constantly being added or new work being done for the customers, and under the old method there was no plan, except pure guesswork, for establishing the rate to be paid for the labor involved, whereas to-day, by reason of these trained experts I have just referred to in answering the last question, it has been found perfectly feasible and is constantly being done to take that new product and analyze it and determine from experience and methods the time required for the operations in making it, thereby establish the correct price to be paid in making it from the start.

Mr. KEATING. You say these rates are invariably correct from the start. On what basis do you determine those rates? Suppose a new job comes in to be dealt with by a molder, we will say.

Mr. TOWNE. Yes.

Mr. KEATING. Now, on what basis will you determine the piece rate you will pay that molder?

Mr. TOWNE. May I use another subject for illustration, a little simpler than a molder?

Mr. KEATING. Certainly.

Mr. TOWNE. Well, suppose it is a piece of small metal work and which involves turning a bar of steel or brass and sizing it, and finally grinding it to an accurate size. The drawing tells you the length and diameter of that bar and thereby you get its superficial area. The records in any establishment where this process has been long in use tell us accurately the cost per square inch of surface for doing each of these different kinds of work, for roughing out a bar for the finishing cut, for the grinding, if it is required, likewise cutting screw threads different diameters and different lengths. Now, having that fund of information based upon experience, the men take this drawing and analyze it into these component operations, and for each of those operations they use these rules derived from experience, and adding that up they get their cost for this particular piece of work; and we find by experience that labor costs determined in this way are so accurate that with few exceptions they do not have to be changed.

I speak here from very unusual experience, that such errors developed, or are found, are almost without exception errors in favor of the operatives, and, if so, they are let alone. The operatives get the benefit of them.

Mr. KEATING. You say that they are fair and just to the operatives. What do you mean by fair and just to the operatives?

Mr. TOWNE. First, that at that piece rate the average operator, in my experience, I can say practically all operators, except some that are thrown out very quickly (of course, you find misfits who ought not to undertake work of that kind, and are not qualified physically or mentally), make better than the wages they would earn if paid by the day for the class of work on which they are employed. That is one answer.

Mr. KEATING. And it is necessary for the employer to determine how much a man should earn in a day, what would be considered a fair day's work?

Mr. TOWNE. No, sir; some men are worth $8, some $5, some $3, and some only $2. That is fixed by the market.

Mr. KEATING. Considering this particular unit you described a moment ago: If in the judgment of the employer the employee should earn $2.50 a day, and if as a result of your study you determine more or less arbitrarily that a man should produce 100 of those units in a day——

Mr. TOWNE. Yes; that would be at the 2½-cent rate.

Mr. KEATING. The employer then would say he would pay 2½ cents for each unit, and if the workman worked as efficiently, as skillfully, and as rapidly as the employer thought he should, or the efficiency engineer, as the case may be, and he produced 100 units, he would earn $2.50 for a day's work.

Mr. TOWNE. That statement needs a little qualification. That rate is fixed on the basis of a day's output which is easily feasible to any man or woman, as the case may be, at all qualified for the work of that particular kind, with the knowledge and expectation that those who have special aptitude for that kind of work are going to exceed the number of pieces a day and will get an extra compensation.

Mr. KEATING. If the employer is considerate of the employee, of his physical and financial welfare, then he would fix a reasonable task. He would, for instance, say we should produce 100 of these units?

Mr. TOWNE. Yes, sir.

Mr. KEATING. But suppose the employer is not considerate, suppose he says, "You shall produce 150 of these units in eight hours," and $2.50 would be reasonable compensation for an eight-hour working-day, then, of course, he would divide 250 cents by 150 and reduce the cost per unit?

Mr. TOWNE. He would make a 2-cent rate, we will say.

Mr. KEATING. Yes; and is there not a very reasonable danger that you simply speed up your employee——

Mr. TOWNE (interposing). There was just the same danger as this, that if in a given locality, we will say, the rates per hour for a certain grade of machinist were 30 cents and here is an ignorant or an avaricious employer, if you please, who thinks he can make money out of his competitors by beating that rate down to 25 cents or 28 cents an hour, and he tries to do it, and here and there he will get some workman who is out of a job or in need who will accept it, or perhaps a man who is not really cognizant what the rates are, but you know as well as I do that man does not hold his help very long and in the long run he does not prosper. He gets the dregs of the trade instead of the better class of mechanics, and in the long run he can not beat them.

Mr. KEATING. You do not believe then that low wages, in the long run, are really cheap wages?

Mr. TOWNE. I know to the contrary, absolutely, that high wages mean low cost as a rule.

Mr. KEATING. Will you give me a little information on another point? Suppose we take this example of 100 units, and the employer feels that the $2.50 would be a fair day's pay. That represents 2½ cents per unit. Suppose that an efficient workman produces 200 units, does he get $5?

Mr. TOWNE. Absolutely; and in my own plant to-day, Mr. Keating, there are people working at piece rates which were necessarily fixed by this system I have described, because it is new product they were working on—only taken on lately—men and women both, men whose normal rate of wages, what we expect they would earn, would be about $2.25 to $2.50 a day, and some of them are earning $4 and some $5, and I heard the other day of one making $8 a day. The rate standard is set.

Mr. KEATING. The rate per unit stands?

Mr. TOWNE. They stand with one exception. If the rates are complained about and the workers say, "this rate is too low, we can not make a day's pay of it," then we investigate the thing most carefully; we see what other workers on the same jobs have to say about it; we review our experiments and tests and figures, and if there is any error it is corrected. Excepting that, the rates stand permanently, definitely, until some change in the job. If we introduce new machines or method or change the article or product, then of course the rates have to be reviewed.

Mr. KEATING. Then in your judgment it would be unjust to the employee to reduce his pay per unit as his efficiency increased? To make myself clear——

Mr. TOWNE. You make yourself quite clear.

Mr. KEATING. Do I?

Mr. TOWNE. I will not say whether I think it would be unjust or not, but I say it would be very bad business on the part of the employer, so bad that we do not do it. The very essence of this is that the rates having been adjusted in this careful, accurate, and scientific manner, are intended to be permanent, and will be maintained permanently until there is some change in the situation, in the condition, some change in the product or the process.

Mr. KEATING. I want to call your attention to this testimony, which was submitted at the hearings before this committee in the Sixty-third Congress by Gen. Crozier, the Chief of Ordnance, in which he told of the operation of this system in Government factories, and in which he testified that in order for an employee to get a 33⅓ per cent increase in his salary, his output would be increased 274 per cent.

Mr. TOWNE. Yes; that is quite probable. No doubt he was speaking by the card.

Mr. KEATING. It is the testimony of Gen. Crozier. You testify that that would be considered bad business?

Mr. TOWNE. Oh, no; you have got two things confused there, Mr. Keating. The 200 per cent—in come cases we have had 300 per cent.

Mr. KEATING. Then, the employee should get 300 per cent increase in salary?

Mr. TOWNE. Not a bit of it. It is not due to anything he has contributed to. It is due to improved methods, sometimes improved machines and improved tools and improved methods, but the workman has not contributed one penny. We compensate him for what he does—what is within his control and power to do—but we do not give the workman the benefit of it. For example, if, at the expense of $1,000, we throw out an old lathe and put in a new one, which will do twice the work.

Mr. KEATING. That really was not the question.

Mr. TOWNE. That is covered by Gen. Crozier's statement. Let me say right here that one of the reasons which appeal to me very strongly for urging this bill should not have your favorable consideration in the injustice it will work to the mechanic in the Government plants. In effect it says to them, "You shall be debarred from the privileges and benefits which your fellows of the same trade enjoy in outside plants." They are permitted, in a multitude of plants and a number that is constantly increasing, to come under the operation of this new and better and more scientific method of production and thereby to increase their wages 10, 20, and sometimes 50 per cent. You are proposing to pass legislation which denies that privilege to a man if he sees fit to work for the Government of the United States.

Mr. NOLAN. What would you say to the fact that the very men you speak of, in the only one establishment where this thing was put in to any considerable extent, are the people who originally complained about it, and are complaining about it to-day and have even struck against it and sent delegations down here appearing before this committee? They sent delegations and appeared before the subcommittee of the House in the Sixty-third Congress and protested emphatically against it and pointed out their reasons therefor. You say we are going to deprive them of this, and the people you say we are going to deprive are the people who are working against it at the present time and are strongly protesting against it?

Mr. TOWNE. Some of them.

Mr. NOLAN. According to the best information we have had there was not anybody who came forward to ask for its retention or that it be put into further operation.

Mr. TOWNE. According to the information I have there were plenty that were ready to do that; would have been glad to have done it. I believe the evidence of Gen. Crozier and his assistants would be more valuable there than mine.

Mr. NOLAN. In saying that, let me call your attention to the fact that the committee, composed of Secretary Wilson, Secretary Redfield, and Mr. Tilson, held their hearings at the Watertown Arsenal and had every opportunity in the world to do it.

Mr. EMERY. Did not that committee report that no legislation should be had at this Congress after hearing that testimony?

Mr. NOLAN. This gentleman here is testifying that we are depriving men of something they want.

Mr. TOWNE. I am expressing my opinion.

Mr. NOLAN. I want to show you that the men had all the opportunity in the world to ask for it, and instead of asking for it they protested against it. I say they had the opportunity to ask for its retention and to spread it to others, and they did not take advantage of this opportunity.

Mr. TOWNE. As I was not present at those hearings, of course I am not competent to criticize what was said, but I have a very decided impression that only one side of the situation there was effectively brought out, and for some reason I do not know what the other side saw fit not to present its case as effectively as it might. But I can make this assertion with absolute confidence, that in the course of time, if this better system of adjustment of compensation is forbidden in the workshops of the United States Government and is not illegalized in the private shops, that you are going to find increased difficulty in getting mechanics to work in the public shops, because they prefer to work in the other shops where they can get better conditions. That is shown right in my own establishment, if you will pardon me again, where we are constantly—did more in the earlier years when introducing this system, we had to do it slow; it is a matter of great detail and labor, and when it was only partly introduced in certain departments we were constantly petitioned by workmen in other departments to let them come in under it, or to hasten up the work necessary to bring them in under it, and that will be true, gentlemen, in any place where the system is carried out intelligently and fairly and the working people come to understand what it means to them. Because do not forget that primarily, as Frederick W. Taylor, the chief apostle of this new art and science, emphasized all his life as the first proposition that the chief, the first purpose of scientific management, as applied to the compensation of labor, was to improve labor's opportunities and labor's rewards. That was said again and again and always, and those of us who are in touch with his work and who are carrying it forward now can make the same statement, that increased compensation for labor, better opportunities for labor, better conditions for labor to work under, are all among the fruits of this new and better method.

Now, the second thing. What I have discussed so far relates chiefly to the first two things. The other is the use of a bonus or premium system.

What is a bonus in the sense that it is used in this connection? It is a payment higher than the ordinary efficiency, whether due to skill or industry, effort or particular aptitude of the individual. There is no system which does not involve that element except the flat day rate, the compensation of employment of every kind whatever, every place where there is exercised manual or mental or any other work. The only way to eliminate that is to pay a flat rate for so much service, a salary of so much a month, a wage of so much a day or an hour irrespective of what is accomplished or produced in return for that payment. That is the old day rate, that everybody is desirous of getting away from and which has largely disappeared, which, in the industries I am familiar with, has been reduced now to about 30 per cent or less of the total wage payment; and the constant effort of the manager is to reduce that per cent, and the constant desire and wish of the employees, as I have known them in my long experience, is a preference, if they are on day wages, to get off of it and on to piecework, if the conditions of the work make it possible.

What is the effect of a bonus? It at once accomplishes something that the advocates of this measure and the opponents of the system object to. It introduces discrimination in the reward of labor, because the operative who is by nature better adapted to that particular thing has more nimble fingers or a quicker eye or a little keener intelligence inevitably gets ahead as a result of these advantages and does something more than his neighbor who has not them and will begin to differentiate. That is what a bonus accomplishes. It is what is accomplished all through life and ever since human life began on this planet. That efficiency, skill, and ability, other things being equal, are recognized by nature and by man and carry their rewards, and most of us think it is right and should be so. It would be wrong to apply that principle if as a result those who are less fortunate in their natural gifts were punished and penalized in any severe and unjust way; but that is not the effect.

Mr. Denison. In the particular application of this system, does it include—I am talking about the particular application—does it include elimination of those of the employees who do not come up to a certain standard?

Mr. Towne. It does. It provides for the earnings by the employees of that grade of about what is the normal, current day rate for that class of labor in that locality, with a premium or bonus for those who can do better, except where it is found that that person at a certain job is incompetent, disqualified for that—he may be very competent for something else, but he is a misfit, when effort is made to find the right place for the individual, if he happens to get in the wrong place.

That is one of the new things that scientific management determines, the more intelligent study of the human unit to find the right place for each human unit, to fit him where he is under the best conditions and able to do things naturally intended for him to do.

Mr. Denison. How does the system provide for determining what a man ought to earn in a particular line? What standard do you accept or take?

Mr. Towne. The system does not determine that at all. That is a matter of current information and knowledge.

Mr. Denison. That is what I want to find out. In the application of the system what standard——

Mr. Towne (interposing). Take, for example, a piece of carpenter work, and in the locality you will find that the current rate of wages for carpenters is 40 cents an hour. That is the starting point, then, for fixing a piece rate for an operation that has got to be performed by a skilled carpenter. A carpenter of fair average skill at that place, at that piece rate, can make his 40 cents an hour, but if he possesses extra skill and high efficiency through some gift of nature, or idiosyncrasy he may be able to make more than that. Now, see what the result of that is and how he naturally benefits, unconsciously but not the less surely. The large factor in nearly all products of modern industry are those which we consume, clothes and food, used in homes, and so on, are all made by machinery. The cost of machinery, the investment in it, is a very large element, and the efficiency with which that machinery is used in turn becomes an important factor in the cost. If you have a machine which costs $10,000 a day, it makes a good deal of difference in its utility and output whether that machine is operated six days a week or three days a week, and if the conditions are such that it is only effectively operated three days in the week, there is a resulting increased cost and burden to the manufacturer, which he in turn tries to slip along to his customers.

Now, under scientific management, by better coordination due to this more skillful planning of the work of the mechanic and the provisions for assisting that work, that machine is enabled to operate six days in the week instead of three, and there is indeed a large gain to the employer, and it is out of that gain that the employer is able to pay these premiums or bonuses for increased output and yet have for himself a substantial reduction in the cost of the product.

Mr. KEATING. On that point I find Senator Borah in making a report to the Senate on a similar bill, quoting from the book by Mr. Taylor, makes this statement:

> When the writer (that is, Mr. Taylor) left the steel works, the Bethlehem pieceworkers were the finest body of picked laborers he had ever seen together. They were practically all first-class men, because in each case the tasks they were called upon to perform were such only as first-class men could do. The tasks were all made so severe that not more than one out of five laborers, perhaps even a lesser percentage than this, could keep up.

Mr. TOWNE. Yes; I happen to know what Taylor was talking about in that case. It was largely, partly at least, the handling of pig iron, the roughest kind of manual labor, a kind involving perhaps more severe physical strain than almost anything else you can think of. Mr. Taylor found to his surprise that applying his analytical methods of study to the accomplishment of the work, and not primarily to determining piece rates at all, but by seeing how it might be done best, that these men were wasting a great part of their energy, and, incidentally, their time, and that by overstrenuous work they were exhausting themselves physically and bodily. But they found also that many of the men who had been hired, substantially as day laborers, and turned loose in the plant for different foremen to take had thereby drifted into work of this kind, utterly unsuited to men, for example, with rupture and men with tuberculosis; men physically weak and physically unfit. He weeded out all men of that kind for that kind of work, and said to the employing office, "Put these men somewhere else, in a place where they will have work suited for them."

Mr. KEATING. Does that not strike you as being rather extraordinary——

Mr. TOWNE (interposing). Let me finish, if you please. He then experimented with this particular piece of crudest sort of work, the lifting of pig iron, and determined the rythm with which each motion ought to be performed, trained his gangs to do it in that way, and found that he could increase the amount of work they did 30, 40, and, I think, in one case 50 per cent, yet by having proper intervals of repose, insisting that the men should stop (and for that purpose he used a watch), that at certain intervals, 5, 8, or 10 minutes, whatever it might be, they should stop and simply stand and rest, or sit down and then go on, they would accomplish a great deal more work in 60 minutes than by their previous continuous motion, and at the end of the day's work would be simply comfortably tired and not exhausted as they had been before.

That is an illustration of what scientific management is trying to do to find out how to do better than before; how to do best, if possible, then to train the men to do the work in these new and better ways, then to compensate them for it fairly in proper proportion.

Mr. KEATING. Does it not seem to be a trifle extraordinary that the system should result in the elimination of four out of five laborers?

Mr. TOWNE. I am inclined to think that is an exaggeration.

Mr. KEATING. It is quoted from Mr. Taylor.

Mr. TOWNE. Yes; but I doubt the fact.

Mr. KEATING. And he adds, "Perhaps a smaller percentage than this."

Mr. EMERY. That men efficient or——

Mr. KEATING (interposing). I have quoted the exact language Senator Borah quoted in his report. He says:

> The tasks were all purposely made so severe.

Mr. TOWNE. Whose words are these?

Mr. KEATING. Mr. Taylor's book, paragraph 25, page 121.

> The tasks were all purposely made so severe that not more than one out of five laborers (perhaps even a smaller percentage than this) could keep up.

Your suggestion about enabling them to perform the work in better or more efficient fashion of course applies to any intelligent man, yet I have often pondered that particular paragraph. It seems to me that a system which took a miscellaneous body of workmen and eliminated four-fifths is rather severe.

Mr. TOWNE. May I translate it?

Mr. KEATING. Certainly, we shall be glad to have you do so.

Mr. TOWNE. Mr. Taylor was a great friend of mine and I regard him as having had done more as an American engineer in a generation to leave an impress, which will last for all time, as founding a new system than any other man; but he had his faults, like the rest of us, and one of them was a very intense temperament, and as a result of that, a habit of overstatement. He exaggerates, unconsciously but unavoidably, because he is so full of his subject and so intense.

Now what was done there was undoubtedly to select the man most fit for this heavy labor's work, lifting, and to shift the unfit ones to something else they were better fitted for.

Mr. NOLAN. You say Mr. Taylor probably increased the work of those men 30 or 40 per cent in that instance?

Mr. TOWNE. The result of their work. He reduced the amount of their work so that they did the work much more easily than before.

Mr. NOLAN. I will read briefly from the record here exactly what Mr. Taylor said regarding how he increased the output of those men:

> When Mr. Taylor undertook to install his system in the plant of the Bethlehem Steel Co., the laborers handling pig iron were receiving $1.15 a day to $1.85, or 60 per cent. When the Taylor system was installed finally the men were handling 48 tons per man per day and the wages of the fastest workers had been increased to $1.85 per day; thus it will be seen before the installation of the Taylor system the laborers received 8.8 cents per ton, and after the installation of the system 3.8 cents per ton.

Those figures are Mr. Taylor's figures from his testimony.

Mr. TOWNE. Yes; I have no doubt but that they are correct.

Mr. NOLAN. He increases the work 300 per cent; increases the wages from $1.15 to the fastest man $1.85.

Mr. TOWNE. And decreased the physical effort.

Mr. NOLAN. But it does not say that. It does not appear.

Mr. TOWNE. He has said it elsewhere.

Mr. NOLAN. But according to the statement read by Mr. Keating here from Mr . Taylor's own book, he made the task so hard that only a few men could undertake it.

Mr. TOWNE. Mr. Nolan, I have tried tomake what I am sure is a fair explanation of that.

Mr. EMERY. Pardon me, Mr. Nolan, that was not a quotation from Mr. Taylor.

Mr. NOLAN. The figures are from Mr. Taylor.

Mr. EMERY. I mean the language is not. You are reading somebody's else argument.

Mr. NOLAN. The figures are Mr. Taylor's. I did not read all of that. The most of it was my own language.

Mr. VAN DYKE. You say you have had this system in vogue 10 years in your plant?

Mr. TOWNE. We have been at work 10 years introducing it, and are not through yet.

Mr. VAN DYKE. You could not tell then the per cent of increase in your output because of the system?

Mr. TOWNE. No; because it is applied in our case to thousands of different articles. It has been very substantial, so much so that to bring it to a simple measure we had to expend about $25,000 before we could begin to see any return from it, and yet we were satisfied that the investment had been a good one and that the returns would come; and they did come; and that was perhaps after the second year.

Up to the present time we have spent many times that amount, but the benefit has been so clear and obvious in every department and as to every product, that there is no shadow of doubt about the expediency of it.

Mr. VAN DYKE. Can you tell me this, the percentage of increase of the number of men in your plant or the decrease?

Mr. TOWNE. The number of men in our plant has increased very largely, because the volume of business has increased very largely.

Mr. VAN DYKE. I mean proportionately to the business and output?

Mr. TOWNE. No; I have no figures that would be of any significance there.

Mr. VAN DYKE. Neither could you tell us the proportionate increase per wage per man?

Mr. TOWNE. Not from memory.

Mr. VAN DYKE. Could you submit those figures?

Mr. TOWNE. I could submit some figures covering that kind of information to the committee and shall be glad to do so.

Mr. VAN DYKE. As I understand this bill, of course, primarily, it is to apply to Government employees entirely. Certainly it is to apply to abuses which are being practiced in the Government service at the present time, and you have no objection to correcting any abuse which is in existence at the present time in the Government service, have you?

Mr. TOWNE. None at all; on the contrary, I am glad to promote it.

Mr. VAN DYKE. We have, for instance, probably some 130,000 to 140,000 postal employees, and each branch of the Postal Service is being subjected at the present time to a time system, in which they use time-saving devices. For instance, on carriers they have a pedometer on the leg, and they time them in order to find out what is the quickest possible time they can cover a route, and the other men have to come up to that time, or have just recently, and they have been putting them back into the collection service or other service of that kind. In other words, there is no bonus system. It is all the other way. In the Railway Mail Service they have inaugurated a system whereby they take the heaviest night in the week, where primarily, or before inaugurating this system, they used to have five men on a crew, they put the five men out on the heaviest night and reduced that crew proportionately each night according to the amount of mail. If they get an excess of the regular amount of mail on any one of these nights, these men have to speed up, practically at the same rate as a man at an ordinary walk when he has to go on a dog trot, in order to clean up and distribute at this rate on their route.

Mr. TOWNE. Do you call this scientific management that you are describing?

Mr. VAN DYKE. I am talking about the provisions of the bill. The bill, as intended, says "time-saving device or system." This is a timing system.

Mr. TOWNE. Supposing under this system you have just described it is found out that a certain carrier on a route in New York City has 20 or 30 per cent longer route than it is supposed he had, due to his having to go into and out of corridors, as nearly all do in the lower part of the city, and that thereupon the department says, "Why here this rate is not just and fair; that man ought to have a higher rate or a shorter route. He is being treated unfairly." Would you object to the application of the system for that service?

Mr. VAN DYKE. The bill as it stands at the present time does not take that into consideration, but it does take into consideration the abuses prevalent in the service at the present time, and all this bill seeks, as I understand at the present time, is to correct those abuses which are prevalent in the Government service. As a matter of fact the bill does not state that even the Government departments can not time the clerks in order to discover the cost of operating at all, but it does seek to prohibit abuses which are being practiced at the present time.

Mr. TOWNE. Would you not try to eliminate abuses in both directions? Suppose for example, the postmaster of New York City found on one particular route the carrier taking two hours, where his predecessor took only one hour, and he asked him about it and he said, "I can not do any better," and thereupon the postmaster should put some other carrier, in whom he had confidence, on the route and told him to take it a day or two and he found he could do it comfortably in one hour. Would you say that was a misapplication of scientific methods?

Mr. VAN DYKE. It has been my experience, after my varied experience in the Post Office and other departments of the Government, that we never have to legislate along those lines; that all we have to legislate for is to prohibit abuses the other way.

Mr. TOWNE. Do you not think a case of that kind ought to be subject to correction as well as the other?

Mr. VAN DYKE. It is taken care of at the present time in the service. They have no bonus system, but they have a demerit system or a plus and minus system. There is one way in that service by, which employees can obtain 500 plus points, that is by risking life, but there are six distinct, different ways they can get 500 minus points. For instance, he can make a misstatement to his superior. It is abuses of that kind we are endeavoring to correct in this bill.

Mr. TOWNE. I should be with you most heartily in any legitimate effort to prevent abuses, but in preventing abuses do not let us legislate good things out of existence, still less make them penal.

Mr. NOLAN. On the question of fatigue and exhaustion, among the questions, it said, "Does scientific management undertake to study the question of fatigue and exhaustion and prevent it?"

Mr. TOWNE. It does in all cases of a nature in plying that element.

Mr. NOLAN. Did the committee that investigated for the Industrial Relations Commission visit your plant?

Mr. TOWNE. No, I believe not

Mr. NOLAN. Have you ever read their report?

Mr. TOWNE. I read part of it. I do not think I read the complete report.

Mr. NOLAN. Do you know that they went through 35 shops?

Mr. TOWNE. I am not sure ours may not have been among them. I am outside of active management now.

Mr. NOLAN. And they took about one year to make their investigation?

Mr. TOWNE. I know they made a long investigation.

Mr. NOLAN. You know that three men made a unanimous report on it and signed it?

Mr. TOWNE. I so understand.

Mr. NOLAN. I should just like to read something here and then ask you what you think of that investigation on the question of fatigue and exhaustion. This is on page 218 of the final report of the Commission on Industrial Relations and is as follows:

> When we come to the matter of fatigue studies and their connection with speeding and exhaustion, the claims of scientific management seem to break down completely. No actual fatigue studies were found taking place in the shops, and the time-study men, who should be charged with such studies, seemed, in general, to be quite indifferent or quite ignorant in regard to this whole matter. This does not mean that no attention to fatigue is given in scientific management shops. Cases were found where the health and energy of the workers were carefully observed, and attempts were made to adapt the work to their condition, but the methods were the rough-and-ready ones of common-sense observation. Rest periods and modes of recreation during the working hours are a regular institution on an extended scale in but one shop visited by the investigators. Isolated instances were encountered elsewhere, but managers, in general, apparently do not even entertain the idea of their institution.

Mr. EMERY. Is that not the report Mr. Basil Manly made?

Mr. NOLAN. It is not the report of Mr. Manly. It is the report of Prof. Hoxie; it is the report of Prof. Hoxie with Mr. Frye and Mr. Ballantine.

Mr. EMERY. I know that commission made an investigation, but I read that report, and my impression was that is Mr. Basil Manly's conclusions from their report.

Mr. NOLAN. It is nothing of the kind.

Mr. **Emery**. Is it signed by them?

Mr. **Nolan**. The original report to them is signed.

Mr. **Emery**. But that is not their language?

Mr. **Nolan**. Yes; this is their language, condensed. Their report is over here in the other room.

Mr. **Towne**. Who did the condensing?

Mr. **Nolan**. They did themselves. They were confined to 40 typewritten pages. This is their report and none of these reports are signed by the investigators.

Mr. **Emery**. What I am calling your attention to is that Mr. Basil Manly wrote that report and that is his language deduced from their inquiry and submitted to the committee.

Mr. **Nolan**. Absolutely, no.

Mr. **Emery**. Their names are not signed to it?

Mr. **Nolan**. No; but that is their report.

Mr. **Emery**. It is signed by Mr. Manly.

Mr. **Nolan**. The whole report of all these investigators, but this is the report of these investigators.

> The investigation of scientific management was conducted by Prof. Robert F. Hoxie, with the expert assistance and advice of Mr. Robert G. Valentine, representing the employers' interest in management, and Mr. John P. Frey, representing the interests of labor. The investigation grew out of public hearings held by the commission during the spring of 1914, at which the almost unqualified opposition of labor to scientific management was manifested. The purpose of the investigation was to test by the results of actual practice the claims of scientific management and the charges of the representatives of organized labor.
>
> As a result of their investigation, Prof. Hoxie, Mr. Valentine, and Mr. Frey submitted a report, agreed upon without exceptions, in which the statements and recommendations which follow are embodied.

Mr. **Emery**. Yes; I understand that. But that is a paraphrase there. If you will pardon me, the point I want to call your attention to is that Mr. Basil Manly probably reported on all those subjects and he deduced his conclusions from these documents, and Mr. Basil Manly's report you have before you was signed by four of the commissioners and disapproved by five.

Mr. **Nolan**. I am stating on the authority of the man who conducted this investigation that they were confined to 40 typewritten pages to be included in this report, and were included as they state it.

Mr. **Emery**. I have had Mr. Hoxie's own statement that he did not write that part of the report, but he has since published his report, which I have read. It is printed by Appleton & Co., and is a very interesting report, but it does not support the condemnation contained in there.

Mr. **Nolan**. My understanding from Mr. Fry is that this is the 40 typewritten pages they were compelled to condense their investigations into, and all testimony is over here in another room under control of this Committee on Labor.

Mr. **Towne**. May I suggest that there is an honest difference of opinion on this thing, but the best possible testimony you could have before this committee would be some of the men and women who have been working under this system. Why not let them come and testify?

Mr. **Nolan**. The Congress of the United States appointed a commission and spent several hundred thousand dollars in investigating industrial conditions in this country, and this commission saw fit to appoint some man who had no connection with labor or employers, and he was deputized to select two, one representing labor and one the employers, and to conduct an investigation of 35 shops, covering a period of over one year, and I think that Congress in analyzing this question ought to take into consideration their investigations, and not the testimony of individual witnesses, as they found it, not upon the theory upon which scientific management is based, but upon its practical application to industry and the human element involved.

Mr. TOWNE. Do I understand from that that your committee is unwilling to hear individuals on the bill?

Mr. NOLAN. I did not say that. I say inasmuch as Congress appropriated for this investigation, that this report ought to be given some consideration in the investigation.

Mr. TOWNE. Suppose the testimony of individuals would satisfy you that is right?

Mr. NOLAN. I have not any objection to receive the testimony of individuals, but I am calling your attention to a statement you have made here and to the statement of people who investigated this very proposition, or the various elements of scientific management, and I want to ask you what you say to this report?

Mr. TOWNE. I say that in my best belief it does not correctly represent the views and sentiments of nearly all who are working under what we call scientific management. I think in some way the committee must have been misled; not have got the proper source of information. My urgent suggestion is that this committee allows some of these people to come here and tell their own story. I am sure other people will furnish a list; I will furnish one; let us pick out the names at haphazard and have them appear here. I think you will get more light than from any theoretical discussion.

Mr. VAN DYKE. May I ask the other two questions I have in mind? One of those questions is this: Even if this bill were passed it would not become necessary for you to throw out the efficiency system in your shops, would it?

Mr. TOWNE. Oh, no; this only applies to the Government arsenals, but we are apprehensive that if the Congress of the United States sees fit to put the stamp of crime upon these things, if performed in the Government arsenals, that it is going to become criminal for us to continue it in our private shops, and we want to forestall that if we can.

Mr. VAN DYKE. Of course you understand there are thousands of Government employees besides those working in the arsenals?

Mr. TOWNE. Yes, sir.

Mr. VAN DYKE. In fact, they are the minor quantity, taking into consideration the large work of Government employees, and that being so, do you not think it is rather hard not to legislate in order to correct certain abuses amongst Government employees?

Mr. TOWNE. Most assuredly, when you are satisfied as to the existence of those abuses, but I tell you those abuses do not exist in the present case; this is all imaginary; you are shying at a shadow, and if you will take time enough and permit witnesses to come here who have personal knowledge of facts and can testify concerning the facts, you will see I am justified in my statement.

Mr. Van Dyke. Of course I have my knowledge upon the fact that I have a very intimate acquaintance with Government employees for 16 years; in fact I just left the service a few years ago, and I know absolutely that at the time the checking system in certain departments was a nefarious proposition and there should be some legislation or some action taken in order to stop it.

Mr. Towne. Let us stop that if that is wrong.

Mr. Van Dyke. And that is, as far as I am concerned; I am endeavoring to do this when I would vote for a report on this bill, because it applies to those employees.

Mr. Towne. As to the abuses in the Post Office Service to which you refer, I am not familiar with them. As to these operations in the Government plant at Watertown, I am fairly competent to speak on them, because those operations are fairly parallel with those in my industries and others I am familiar with; and, in effect, what you are proposing to do here is to pass a law, the effect of which would be a law to promote inefficiency in the United States service. Here we are to-day with most of the world in a whirlwind of a gigantic war, with uncertainty as to when we may be drawn into it, as we all hope may not be the case, but with the certainty that if we should be involved we will need every ounce of national efficiency of every kind, and that whatever may be the result of the war politically, there is going to be an economic revolution afterwards which will sweep the whole world in its influence and concerning which we do not yet know and can not yet foresee the effect upon this country, except to be very sure that anything we may do in the way of increased efficiency and preparedness is going to stand us in good stead, and probably will be needed badly. In the face of all these facts, to pass a law penalizing a system which overwhelmingly, as testified to, stands for efficiency, for economy, for better reward to labor, and higher production from labor and from machinery—in other words to not merely stop the wheels of progress but to set them spinning backward and say it is a crime—and we do not believe you will do it.

Mr. Nolan. You realize, do you not, that this bill is only aimed to do away with the time study and stop watch and bonus and premium, which is a small part of the efficiency system? Is that not a fact?

Mr. Towne. Mr. Nolan, I think I apprehend the scope and purposes of the bill as well as anyone.

Mr. Nolan. Will you answer that question? Is that not all this bill is intended to do?

Mr. Towne. Yes; it is to stop the flow of the river at its source.

Mr. Nolan. Do you think that the whole structure of the scientific management system demands that the stop-watch time-measuring device and bonus and premium system should be maintained?

Mr. Towne. I think you can not have any fair and just payment of compensation for labor which shall be fair to labor and to the employer without the element of time being fundamental. It makes no difference what kind of instrument you use to measure time. I do not care whether it is a clock, a stop watch, an hourglass, or anything else.

Mr. Nolan. You say fair to labor. Then, if it was fair to labor, and men who have operated under it are opposing it, how can you reconcile that statement?

Mr. TOWNE. By the picking out of the witnesses.

Mr. NOLAN. I am talking now about the very men in the Government establishments we are seeking to eliminate it from.

Mr. TOWNE. And for one man of that kind, Mr. Nolan, I will enter under bond to bring 100 here equally qualified, qualified by experience, who will testify under oath to the contrary.

Mr. NOLAN. Government employees?

Mr. TOWNE. No. What difference does it make whether a man is a Government employee or not?

Mr. NOLAN. This has absolutely nothing to do with private employees.

Mr. TOWNE. It has everything to do with it.

Mr. NOLAN. It has absolutely nothing to do with it.

Mr. TOWNE. It has to do with me as a taxpayer. I do not want to pay taxes for inefficiency.

Mr. NOLAN. It has nothing to do with employing any system you desire in your establishment.

Mr. TOWNE. Not to-day, but if the Government says these acts are criminal, I am going to stop doing them. If they are criminal in the Government shop, they are criminal in any private plant.

Mr. NOLAN. The Government has applied the proposition of the eight-hour day to their establishments. Have you applied it to yours?

Mr. TOWNE. Largely.

Mr. NOLAN. To what extent?

Mr. TOWNE. Well, it varies in different departments. Some are on a 9-hour basis, some on an 8-hour basis, and they all used to be on a 10-hour basis.

Mr. NOLAN. You do not consider that criminal, do you?

Mr. TOWNE. No; but it is not made a criminal offense.

Mr. NOLAN. Suppose the question of the penalty were stricken from the bill, then would you object to it?

Mr. TOWNE. I should.

Mr. NOLAN. It does not make any difference to you whether it is a penal offense or any other offense. You are opposed to it anyhow?

Mr. TOWNE. Except with the penal offense retained, I think the bill is an outrage, but with or without it, it is a stultification and attempts to stop the wheels of progress and permit the Government to do things efficiently and economically and ordering the Government to do that wastefully and extravagantly.

Mr. NOLAN. According to the letter I have here you are chairman of a board of 10 to oppose legislation antagonistic to efficiency in American industry?

Mr. TOWNE. That is right.

Mr. NOLAN. That is a pretty broad statement, is it not?

Mr. TOWNE. That I am chairman?

Mr. NOLAN. No; but I mean that this bill is intended to, that this bill is antagonistic to efficienecy in American industry?

Mr. TOWNE. Does the article you are reading from make any reference——

Mr. NOLAN. It makes the broad statement that it is opposed to legislation antagonistic to efficiency in American industry.

Mr. TOWNE. Yes; that is what we are for.

Mr. NOLAN. And you know that this bill has absolutely nothing to do with private employment?

Mr. TOWNE. I submit it has to do with inefficiency in American industry because the Government itself is a part of American efficiency

Mr. NOLAN. But it has absolutely nothing to do with private employment?

Mr. TOWNE. We are opposed to——

Mr. NOLAN. That is a pretty broad statement, is it not?

Mr. TOWNE. Not a bit too broad. It is just what we mean—we are opposed to inefficiency in private shops and public shops; American shops of any kind.

Mr. NOLAN. Who appointed this committee?

Mr. TOWNE. A group of engineers, our membership collectively, representing most American societies of engineers.

Mr. NOLAN. Scientific management engineers?

Mr. TOWNE. They were included in it and cooperated.

Mr. NOLAN. How wide a scope have you, or how broad has been your work in circularizing the country in solicitation of funds?

Mr. TOWNE. As I have not been in New York for four or five days, I do not know personally, but our desire ultimately is to reach the country quite broadly in industrial circles.

Mr. NOLAN. Have you gone to private individuals also?

Mr. TOWNE. I do not know; I did not compile the mailing lists.

Mr. NOLAN. Can you tell me how much money you received in answer to your circular sent out asking for contributions?

Mr. TOWNE. So far I think it is, to the best of my knowledge and belief, $65.

Mr. NOLAN. How long since you started sending those out?

Mr. TOWNE. I did not send them out. They were sent out by other officers of the committee, but they have only been out a short time. We hope to receive funds enough to enable us to spread this information very broadly among the people that ought to know about it, because we know perfectly well that the public do not know anything about this subject. We are seeking to enlighten them.

Mr. NOLAN. You knew that they had also sent out in a letter, as follows:

> Should it occur to you to write your views to your Congressman, will you kindly send us a carbon copy of such letter.

Mr. TOWNE. That is right. That is the way we believe in doing things, so as to help the Members of Congress to understand the views and wishes of their constituents and enable them thereby to do their work better.

Mr. NOLAN. Then it is a country-wide propaganda to defeat this measure?

Mr. TOWNE. We hope to make it country-wide to defeat any measure designed to prevent efficiency in industry.

Mr. NOLAN. In the Government arsenals, that is what you term efficiency, and what the opponents of this bill term a just measure to stop labor-crushing methods——

Mr. TOWNE (interposing). No; now I am not with you.

Mr. NOLAN. What do the proponents of this bill——

Mr. TOWNE (interposing). I think this has turned into an argument. I have got to go.

Mr. NOLAN. I will say to Mr. Denison that whenever my time arrives to stop asking questions I will do so. I am willing to allow you all the latitude in questioning witnesses and do not want you to interfere with me.

Mr. DENISON. Go ahead and ask him questions.

Mr. NOLAN. That is what I was doing. The last question I asked was the difference of opinion between the people you are representing on this committee and the proponents of this bill. You claim it is a blow at efficiency and American industry, and I say they claim it is a labor crushing method, a method of getting the last ounce out of the workers.

Mr. TOWNE. I am not authorized to say what they may think or claim. I am speaking to the facts, and I have simply to add that I have all respect for organized labor; I believe in it; I think organized labor has been a great boom to the country in a great many ways. As a large employer of labor for nearly 50 years, I have tried to do my duty, at least, and I hope something more, in promoting the welfare of the people in our plant and elsewhere, and any system of employment or of compensation which aims to overwork or to harass or to drive workmen or workwomen would have my condemnation and opposition, but when it is proposed to legislate in a manner to prevent the further development, whether in Government or private shops, of a system whose primary purpose is to promote the general welfare and increase the wage-earning power of the working people, and which I know from personal experience and from wide observation and reading is bringing benefits to the workers, benefits to the employers, benefits to the community in which they work, and benefits to this country, which it is going to need, then I say that legislation of that kind is wrong, and I am going to oppose it, and I am going to circularize the whole country if I can do it to help to that end.

(Thereupon, at 1.15 p. m., the committee adjourned until 7.30, Thursday, March 30, 1916.)

SUBCOMMITTEE OF THE COMMITTEE ON LABOR,
HOUSE OF REPRESENTATIVES,
Thursday, March 30, 1916.

The committee met at 7.45 p. m., Hon. Edward Keating (acting chairman) presiding.

The ACTING CHAIRMAN. The committee will be in order. Mr. Nolan wishes to make a statement.

Mr. NOLAN. I have tried to get in touch with the Committee on Industrial Relations. Mr. Manly wrote the final report of the Commission on Industrial Relations, and I wanted to get from him for the purposes of the record, and for my own satisfaction, the final report of the Commission on Industrial Relations relative to the investigation of scientific management, and I expect before the hearing is closed to get that information and have it for the benefit of the committee and the record.

The ACTING CHAIRMAN. It might be well to state that the committee has decided that witnesses be permitted to make their statements without interruption, and that after they have concluded their formal statement, members will be afforded an opportunity to present such questions as may occur to them, in order that we may facilitate the hearings.

Mr. Emery. Mr. Chairman, in reference to the point Mr. Nolan has suggested, I want to make it clear, the character of the objection I made this morning to the statement that those portions of the report dealing with the subject of scientific management in the final report of the Commission on Industrial Relations represented recommendations or conclusions or findings that had the support of the majority of the commission. The report prepared by Mr. Manly was not indorsed by the majority of the commission, but on the contrary the majority of the commission, in a report beginning on page 307, declared:

> We can not find ourselves able to agree to any of the findings or recommendations of the staff or any resolution based upon them, because they have not the criticism of employers. employees. and others affected by them, which we consider indispensable in order that we might have before us assurances that they were accurate and not chargeable with important omissions.

The report is signed by John R. Commons, Florence J. Harrimon, Harris Weinstock, S. Thurston Ballard, and Richard H. Aishton. That is what I alluded to this morning.

Our next witness is Mr. Sanford Thompson, a consulting engineer of Boston, Mass., who has given much time and study to the subject of scientific management and has had personal experience with it for a number of years on a large and varied scale.

STATEMENT OF MR. SANFORD E. THOMPSON, CONSULTING ENGINEER, BOSTON, MASS.

Mr. Thompson. In going over this matter I had planned to give a good deal as to the results and effects we have had with the subject under consideration, but after hearing the testimony this morning, and seeing how much thought most of you have been giving to the subject, I propose to confine myself chiefly to a discussion of time study. I feel that we agree on a great many of the points that have to do with management. We agree certainly, all of us, that any method that overtaxes the worker is wrong. We agree that the output should be increased, because eventually it tends to reduce prices and to increase wages. We agree that unnecessary motions and operations should be eliminated. I think we agree that standard methods should be established during work, standard methods of labor, standard methods for handling materials, standards in the materials themselves. I rather think, although I am not so sure of this, because the bill as worded really prohibits it, that we agree on the fact that a man should be paid in accordance with his ability and the amount of work that he does. We certainly do agree in believing that we should have in our Government shops an efficient and economical management. Now, of course you may say, Isn't that the whole thing? And it is to a very large extent. The trouble is just here, that we can not get a fair increase in output; we can't get at proper methods; we can't set standards without time study. The elimination of this really knocks industrial development right in the head, and it really eliminates science. I do not know whether you realize that this lack of standardization is responsible for an immense amount of friction between labor and employers. Just to illustrate: Take, for example, the garment workers, those who make the women's garments, about which there has been so much in the papers lately, the strikes in New York and Chicago and the friction in Boston. I wonder if you have thought what one of the principal causes of this trouble is. I am speaking of this as an employee of a union. Mr. Valentine and myself are engaged in the employ of a union in which one of the objects is to make suggestions as to methods of standardiing the work in the trade.

One of the principal troubles in the garment-working business is the difficulty of setting piece rates. The rates because of their inaccuracy and because of the variation of the different garments and of the different materials and so on, are set in a very large majority of cases by guess, or what is the next thing, by trials that are simply very rough approximations. Consequently, both sides to the controversy try to get the best they can out of the bargain, very naturally. In one locality they have an arrangement by which the operators and the manufacturer get together and fix the piece rates. But a manufacturer told me not long ago that he had much rather have his work done, or have his special part of the work he was speaking about, done on a day basis rather than a piecework basis, although the day work would cost more, because of the friction and trouble in setting these piece rates.

I want to illustrate the difference between rates as set by the ordinary methods and rates that are set by time study. I am not going to take the garment workers because we haven't got to that point yet. I want to take as an illustration, just to show you what time study is, and how it is worked out, the case of putting up a moulding such as we see around this room. Now, if you will count the number of corners in that molding, you will see that there are sixteen. In an ordinary room there will be four. You will see that there are different kinds of corners here that you don't get in an ordinary room. There is the inside corner, and outside corner, external and internal, and there are other differences here.

Now, the way ordinary piece rates are set, and this is practically the universal method of setting the ordinary type of piece rates, is to find out from the records the time it takes a couple of men to put up this molding. Take the time that it takes the men to put the molding in a room that has only four corners. Take the time that it takes for various other rooms. Take the time that it takes for a closet, where the corners come so close together that it is very expensive work. Do all these and so get an approximate average of them, and then fix that as the rate for putting up the molding. Now, if a man was working in this room on that average—this, you understand, is an illustration. Molding is not usually put up as piecework, but it is an illustration which corresponds actually to setting of rates on different classes of work, where there is as much variation in different kinds of work as there is between this room and a square room, we will say. When a man is working in this room he takes a great deal longer than the average time, and he gets a low rate of pay. When he works in a large room of this same size with four corners he gets a high rate of pay, and consequently there is a fluctuation and a variation in different pieces of work, and the man one day may earn one thing, and another day he may earn another. Or he may fix his speed according to the pay, so that he will earn about the same on both rooms by working perhaps a little faster in this room and very slowly in the other room. At any rate, it is absolutely inequitable to the worker.

I was through a silk mill the other day and I said to the man who took me around, "What are these girls getting here on the looms?" "Oh," he says, "they get from $8 to $18 a week." "As much variation as that?" "Oh, some girls will vary from $12 to $18." I asked him why that was and he said that it was due to the difference in silk. Sometimes the silk comes good and sometimes poor. He couldn't tell anything about it. That was the cause of the variation. That mill is unsystematized. The making of silk is not standardized so as to provide for those variations in the setting of the rates.

Now, suppose that we come back to this setting of this molding and see what we would do on a time-study basis. Instead of taking the whole room at once, disregarding the character of the work, we take each thing separately and find how much time it takes to make one kind of a corner. We find how long it takes to make one kind of a corner, and how long it takes to make the other kind. We find how long it takes to cut a joint where the molding is spliced, and find how long it takes to put up the different pieces of molding. We find a few other variables. There are about nine variables, nine different units, for example, in putting up a molding. Now, having got those units, we are in a position to find out how long it ought to take to put up the molding in a square room, or a closet, or a room of this shape, because we know how long it takes for the different kinds of corners, for the splice, and for putting up the short lengths, and the long lengths, and for that reason you can equalize the times, and you can get satisfactory rates or fix a time that is equitable.

Now that is one feature. Another feature is time. If you take this room, time it altogether, take the whole time of doing it—and you must remember that ordinary piece rates, all kinds of piece rates are really set by time. If you actually take time out of the question you can't have any piece rates at all. In taking these times you find not only how long it takes to do each piece, but you go down into that and find the best method of doing it. You find, for example, that a certain kind of saw is easier to handle, easier to saw with than another, a saw with a certain kind of teeth you will find will do better work than some other kind; a certain type of hammer is easier to work with for that overhead work; you find that there is a certain method of handling stock, that by planning it out in advance you can bring it in to the man and make it easier for him to work with it; you find that you can get his tools to him; you find that you can plan out the work ahead and tell how long it will take in one room and how long in another, so that he will have less idle time between jobs.

Now, for all these things time study is necessary, and one of the chief features of time study is not the actual getting of the times, to fix your rates, or to determine your standard time, but to actually standardize your work. Now, of course, there is an amendment to the bill which makes some difference in the wording, but I can't see how it affects this method of standardizing a time study. Perhaps some of you will have some questions on that point. We can discuss that more at length.

Now, along with this study of methods and of the shortest ways of doing the work, the quickest way, and the study of how to eliminate the unnecessary operations, comes the study of the fatigue element. Now, I don't know of any way to study fatigue, find out how much rest a man should have in a day, except to actually take time studies on him, and in scientific management work that is done right along, the taking of the time study very often through an entire day to see just how much rest the worker is taking, find out whether he needs more rest than he is taking.

In addition to that the time study affects the machinery. If you have a certain standard time in which to do a piece of work you have got to have the right methods and the right machinery in order to accomplish it in that time, and when you have the right method we find that if a man fails to do a certain piece of work in a standard time, it is more apt to be due to some trouble in the machinery or some trouble in the delivery of goods to him, or some trouble of that kind, than it is because he is not fast enough, and the making of the standard time, which of course is where the bonis and premium come in play, is essential to getting an accurate time in which he should do his work.

The time study also affects the working conditions, because in making the time studies to see that these studies are carried out, the actual handling of the work is studied out very carefully. The attention of the management is called to defective conditions in connection with the shops.

The hours of labor tend to be reduced under scientific management and time study and bonus, for one reason, because the cost of production is reduced and therefore there is more opportunity in which to reduce the hours.

I have here a letter written by an employee of the Acme Wire Co., of New Haven, Conn., and it gives the whole thing in such an interesting way that I am going to read a part of it. It is written to Mr. William Hamley, New Haven, Conn., and signed by Mr. Torwald Hoyer. He says:

> After I am over my surprise that intelligent people in our day can try to stop a method which very soon will show up as the only method under which the workingman will work in the future, I shall gladly and frankly state my experience of working under a bonus system.
>
> I started to work for a concern that was putting in a bonus system (Taylor system) in 1912. When I started to work the shop was still on daywork basis and all the jobs were daywork. I was at the time earning $8 a week; but a few weeks later I was transferred to some part of the shop where they all worked on piecework. After a little experience I could here earn from $11 to $13; but when the whistle blew at night I would be all tired out because I started in full speed in the morning and kept it going as long as possible in order to get as big an amount done as possible; but I would always be too tired to go anywhere at night.
>
> After a while the company was ready to put the whole factory on the bonus basis, and I started to work after the new system, together with the whole room. At first we didn't like it at all; but after a week had passed we all found out that we were not only making the same money and doing the same quantity of work, but we never got tired out as we used to do, because there was a certain time set to do the operation in, which made us start in with speed that would enable us to finish the job in time by keeping it going with that speed all day. We would most of the time produce more than we did under the piece system without being tired out, and after the bonus system we would always be sure to get at least our day rate of pay even if we had bad luck with the work or didn't feel good, as we were always paid our day rate even if we didn't make the job in bonus time (the time the operator is allowed for a certain operation). * * *
>
> The bonus system makes the workingman and his home happy because he don't come home from work all tired out. He also gets fair wages and working under home

conditions with the same rights as his fellow workingman. Some people there will call those intelligent (indeed, they are not) who have the same idea of a stop watch as the dog of a whip. But if they had a little experience and used a very little common sense they would soon come to the conclusion that the only fair way to set the time for a job is by a stop watch.

I think, Mr. Chairman, that I have some other notes here, but you suggested that the questions be left until the end of my talk. Suppose I stop here and see if there are any questions that may bring out points that I would make afterwards.

The ACTING CHAIRMAN. Begin on the left here.

Mr. SMITH. In reference to the working on the silk, the illustration that you made there. Are you a manufacturer or are you employed for these unions as you state? Have you ever been a mechanic?

Mr. THOMPSON. No; I have worked in a shop, if you call that being a mechanic.

Mr. SMITH. Do you know what a workman is and what a mechanic is? There is a difference between them. Do you claim that you ever acquired skill as a mechanic?

Mr. THOMPSON. No; I never worked very long as a mechanic. I worked in a shop two or three years.

Mr. SMITH. In relation to that silk you say that the party could make on piecework, the same party, $8, $12, and $18?

Mr. THOMPSON. Yes.

Mr. SMITH. And that was on account of the difference in the quality of the silk?

Mr. THOMPSON. Yes.

Mr. SMITH. If a party would work just as hard on the poor quality of silk as on the good quality, do you think that that was fair to the workman?

Mr. THOMPSON. No.

Mr. SMITH. That was on account of the quality of the silk. Now, why should not that workman receive $18 on a poor quality of silk just the same as on a good quality?

Mr. THOMPSON. He should.

Mr. SMITH. But they didn't in the illustration you gave?

Mr. THOMPSON. That is the old-fashioned type of piece rate that I am talking about. That is just what I am criticizing and that is just that sort of thing that our time study does away with.

Mr. SMITH. Then she would make $18 on the good quality of silk for the same amount of work as she would in working on the poor quality of silk?

Mr. THOMPSON. Of course when you come to the question of the total amount received there are so many conditions that come in that I am not ready to say that all of those girls in the weaving room ought to earn $18 a week. I am inclined to think they should. I do not know enough about the case. But my point is that if the quality of the silk could not be changed, and supposing that the industry could not afford to pay all the girls $18 a week, that instead of some girls earning $12 a week some weeks, $18 a week in other weeks, they should all earn $15 all of the time.

Mr. SMITH. Well, if she worked just as hard on the poor quality of silk as she did on the good quality, why shouldn't she be paid the $18? She has put in the same amount of energy and the same amount of work.

Mr. THOMSPON. She should receive that if that is a fair wage. But my point is that she should receive a uniform wage.

Mr. SMITH. Then we agree. I understood you to say that she would make only $10 on the poor quality of silk where she would make $18 on the good quality.

Mr. THOMPSON. That is exactly what I am criticizing. I don't know as you get my point about it. It is just that variation from one week to another in the old conditions, not in a scientifically managed shop. It was the old-fashioned method of fixing the rates, and it is extreme, because in ordinary piecework the changes in different jobs come more frequently, so it doesn't stand out so much as it did in this particular case, where he said they worked for two or three weeks on this low type of silk.

Mr. SMITH. Then, according to your method, this work lady would receive the same wages at the end of a week for working on the poor silk as she would for working on the good silk?

Mr. THOMPSON. Yes.

Mr. SMITH. I misunderstood you.

Mr. THOMPSON. If she works just as hard. As a matter of fact probably she works harder. And I am not sure but what she ought to have more.

Mr. SMITH. You gave another illustration of putting up this molding around the room. Could that be done by the time system?

Mr. THOMPSON. Yes.

Mr. SMITH. How many different classes of workmen would it take to put up this molding around this room?

Mr. THOMPSON. A carpenter would do it.

Mr. SMITH. That is put up by cement or stucco. It is run into a mold.

Mr. THOMPSON. No; that is wood.

Mr. SMITH. That is calcined plaster. lime and sand. and mortar.

Mr. THOMPSON. I saw the joint. and I saw it was very much like a wood joint, the upper one here. but that circle is not wood.

Mr. SMITH. But going back to the molding. In the first place you must have a carpenter to make your gauge. You will have to have a tender to bring your material up to him and put it on the board. Then you will have a mixer and then you will hawk and trowel and throw it along and grab your mold and run it. and the man that puts that molding up knows just exactly what he can do it for.

Mr. THOMPSON. I can carry my illustration forward into plastering, but my illustration was for wood molding.

Mr. SMITH. I thought you meant this one.

Mr. THOMPSON. My illustration applies to wood molding. The same principle applies to molding which is made of plaster.

Mr. SMITH. I don't think you can apply it to a building operation.

Mr. THOMPSON. I have.

Mr. SMITH. I do not see how you can do it if there are as many as 10 different operations in putting it in. Some men will put these miters up by taking a long strip. Others will run it in by hand.

Mr. THOMPSON. I have myself taken time studies of plastering of that kind, and I have got some tables worked out which give the time for these different operations.

Mr. SMITH. I won't bother you any further except to say that some men can do twice as much work as others and put on twice as much mortar, and lay twice as much brick. Some men can put them in with both hands, and some men can work a trowel with both hands, and when you contract to put up that work you know how many thousand brick it is going to take and you know just what a fair day's work is, and a man knows what he can do. Any mechanic can tell just what a day's work is. He will figure 5,000 brick in a dead wall but not so many pressed brick, and you put your price up for that class of work. You don't hire your mechanic for the speed that he will make, you don't hire him for his speeding up. You hire him for his proficiency, as a nice workman, and that gets him his next job.

Mr. Thompson. I don't think you understand just the way we analyze the results. Now, time study is just what you are talking about. Time study does take into account the quality of the man. It does take into account the difference in the men and the methods, and does it by study. If you can analyze those things and get them down to a uniform basis and get it so that a man will earn—if you put the thing on a standard time and fix it so that the man can earn a good day's wage, so that he can lay a certain amount of brick, for example——

Mr. Smith (interposing). What I wanted to say was that you would hire them because they were nice workmen and not because they would do so much by the watch?

Mr. Thompson. That is true; but what I have said—I am not talking about speeding up in the least. I am not talking about how many brick a man could hustle and get out. I am trying to impress upon you that the time study is more necessary than any question of speed. In fact, when you come to the question of speed, as I have said before, you have got to take the question of fatigue and all things into account. But the time study gets at the best methods of doing the work, and it eliminates the unnecessary parts of the work.

Mr. Smith. Let me give you just one illustration. When I was engaged in manufacturing, not so very many years ago, I had boxes put up in front of the nailing machines. I didn t have them up more than a day when the men began talking about a sweat block and I tore them down.

Mr. Browne. How did you use them?

Mr. Smith. When they made a bundle of shooks. I did it in good faith. I wanted to keep track of the number, but the workmen would not keep track of them. They thought I was running a sweat block and I went around and tore them down. I had to keep track of the number after they threw them out.

Mr. Thompson. I have got a table here of bricklaying which shows the number of brick, different types of wall, and so on.

Mr. Smith. I warrant you the men were employed for their efficiency and because they were nice workmen.

Mr. Sumners. You want quantity, too; you want both.

Mr. Smith. Brick have been made so long and workmen have been on that work so long that they can almost tell to a brick what a day's work is.

The Acting Chairman. Isn't it a fact that a bricklayer can tell whether a man is efficient when he picks up a brick?

Mr. Smith. Absolutely. A good bricklayer will stretch his mortar along 10 feet and put in his bricks and lay 5,000 bricks a day in a dead wall. But if you are building a nice residence you are not looking for a man to lay a large number of bricks, but you are going to see that the bricks are laid right so that one brick will not cast a shadow on the other.

Mr. THOMPSON. That table shows how the quantity of brick may vary from 150 brick in a day at a normal rate of work for Roman pressed brick, may vary from that to 2,650 average day's work for backing up stone work.

Mr. SMITH. Average day's work?

Mr. THOMPSON. Yes; bonus work or anything else. That table was making a time study. It contains 8, 12, and 32 inch walls.

Mr. SMITH. That is all right, but you would have trouble about fixing the amount.

Mr. SUMNERS. Mr. Smith, even you as a matter of fact fix it as 5,000 in a dead wall.

Mr. SMITH. Yes.

Mr. SUMNERS. Then if you are going around to see what your man has done, and even though he has done a nice job, if he has fallen down much below 5,000 you would want him speeded up a little.

Mr. SMITH. Some men you would pay $2 a day and some men $5, and the $5 man might be cheaper than the other because he was expert.

Mr. SUMNERS. There is one question that I would like to ask Mr. Thompson.

Mr. THOMPSON. There is just one fact on this point that I want to impress on you and that is that this question of time study and analysis is just what is used for this particular purpose that you are talking about, that is, to differentiate between different conditions and the difference in quality and the question of speed where speed can be used, and quality where quality is the essential thing. This method that I am trying to bring out is the important thing.

Mr. SMITH. I of course recognize that it is all right for the contractor to know what a day's work is, but I will guarantee that 50 years before you made that table his men knew what a good day's work was for a mechanic.

Mr. THOMPSON. I have run across a good many contractors and builders, and I never yet have seen one that could tell accurately how much brick his men were going to lay unless he had been on a building of just that particular type. Just one illustration. There was a certain building that was being put up with steel as a means of support, surrounded by brick, brick piers, and the workman or superintendent who was on that job who was an experienced superintendent, who had worked all his life on bricklaying, graduated up from a brick foreman, was completely thrown off his base. He had no idea how much brick those men ought to lay on those piers, because he had not had this opportunity and experience on this kind of work. I was able with this time study to figure out just exactly what they should lay on that pier which he could not do with all his experience, and I never laid a brick in my life.

Mr. SMITH. I don't believe that they laid any more brick after you figured it out than they did before.

Mr. THOMPSON. This was not made for the purpose of making them lay more brick. It was made for the purpose of finding how much brick was an average. It didn't have anything to do with the bonus or speed of the workmen or anything else. It was for the purpose of finding how much brick was being laid by an average mason on average work of this kind. The time study does differentiate between different methods, and carrying it further, which I have not done on this particular class of work, you differentiate between different motions, those which are quick and those which are slow, and you are able to pût the thing on a good basis.

Mr. Smith. I think there is a good deal in what you say about the support you give your mechanic, eliminating a certain waste of time. If he has to go himself and get a drink at the pump, he doesn't get along as well as if his tender brought it to him.

Mr. Thompson. Just to return to my illustration of the molding. Assume that this is a wooden molding.

Mr. Smith. You will find that it is cement.

Mr. Thompson. I am going to take a knife and find out positively. But assume that it is a wooden molding. Unless you take into account these units and the different time that it takes to handle corners and straight work, you can not figure different rooms of different shapes. Now, that same thing applies—and I use it as an illustration—on all kinds of shop work, and machine work throughout the shop.

The Acting Chairman. Mr. Sumners desires to ask a question.

Mr. Sumners. I want to know what relationship there should be between the price per unit under the bonus system above the standard production and the price per unit within the standard production.

Mr. Thompson. Will you repeat that question?

Mr. Sumners. Suppose eight units constitute the standard day. The man does nine units of work. Well, within the standard he gets 20 cents per unit. What does he get for the ninth unit?

Mr. Thompson. Now, do you mean that as a standard time, the time in which he earns a bonus?

Mr. Sumners. No, sir; I tried to state it as clearly as I could. Eight units he must produce before he gets to the point where he has a chance to earn a bonus.

Mr. Thompson. That is where he gets a chance to earn a bonus—that is, he earns, we will say, $1.50 a day and when he makes the 20 pieces he gets a 50-cent bonus, he would get $2 a day.

Mr. Sumners. Let's stop short of the bonus. You don't seem to follow my illustration; I will try to follow yours.

The Acting Chairman. If you will permit the chair to make a suggestion. Suppose in making shoes you would consider that eight pairs constitute a fair day's work, and for that the workman received $8. Suppose he made nine pairs of shoes. Mr. Sumners wants to know how much he would receive per pair of shoes if he made eight pairs and how much he would receive if he made nine pairs.

Mr. Sumners. It seems to me that ought to be a simple proposition on a scientific system.

You pay a man $8 for making eight pairs of shoes, and that brings you to the point where the man has a chance, if he produces more, to earn a bonus. Do you follow me there?

Mr. Thompson. Yes.

Mr. SUMNERS. Well, when he gets to a point where he has a chance to earn a bonus—he has a chance to make another pair of shoes.

Mr. RICHARDS. It would be $1.50.

The ACTING CHAIRMAN. Let the witness answer the question.

Mr. THOMPSON. It is a complicated question. If it is straight piece work, he earns an additional amount for that. If it is under a bonus system, he may get more than that additional for the ninth pair.

Mr. SUMNERS. He may get more than that?

Mr. THOMPSON. Yes.

Mr. SUMNERS. Which system do you recommend?

Mr. THOMPSON. I think perhaps right there, if it will not complicate things too much, I should explain the different types.

Mr. SUMNERS. You may confuse us, but if you would answer my shoe question you would not confuse us a bit.

Mr. THOMPSON. I think I can perhaps explain.

Mr. SUMNERS. Explain in ordinary language, if you can.

Mr. THOMPSON. I think if you will let me just say a word with reference——

Mr. SUMNERS (interposing). We are thick-headed. We are not manufacturing men. You will have to make your explanation in our language.

Mr. THOMPSON. If you will let me just explain to you the way the bonus system works.

Mr. SUMNERS. We don't care so much about the route if you will just tell us where he ends up. Here is a fellow of average efficiency who makes eight pairs of shoes, and when he gets beyond that he gets a bonus. Here is another pair of shoes. What are you going to pay him for that.

Mr. THOMPSON. Now, suppose for example, that eight pairs of shoes were the standard amount at which he earned a bonus. Suppose that his normal rate per day—what I am describing is the bonus system—

Mr. SUMNERS (interposing). That is what I was asking about.

Mr. THOMPSON. Suppose that his ordinary rate paid per day is $3 a day. Now, we will tell that man, "We will never pay you less than $3 a day whatever your output is. If you make eight pairs of shoes, we will give you instead of $3, $4."

Mr. SUMNERS. I wish you would——

Mr. THOMPSON (interposing). I beg pardon, I am coming to your point. After he gets to that point, after he makes eight pairs, how much does he get for the ninth pair?

Mr. SUMNERS. Not at all. You begin to pay him when he makes eight pairs and stop short of the bonus. I gave you an illustration. If you will follow it we can think together. Eight pairs of shoes is what the average mechanic makes and gets for it the average wage, and that is the basis of production.

Mr. THOMPSON. At $3?

Mr. SUMNERS. $8. We can keep even numbers. That is what the man earns during this standard day's work. You have got to have some foundation on which to figure. Now, then, after he has done that for which he would get $8, he produces another pair of shoes, which makes nine pairs of shoes. That last pair of shoes which he has produced takes him beyond the basis of production and brings him within the realm of bonus. What bonus?

Mr. THOMPSON. The way I would usually fix the bonus which he would get, he would get no bonus for the nine pairs.

Mr. SUMNERS. What would he get for 10 pairs?

Mr. THOMPSON. What is that?

Mr. SUMNERS. He would not get any bonus for the ninth pair?

Mr. THOMPSON. What inducement has he to make the ninth? The standard time is where we get twisted, or the standard amount of work that he gives. May we not go back to my——

Mr. SUMNERS (interposing). No; let us stay on mine.

Mr. THOMPSON. The point is, you do not understand the bonus system?

Mr. SUMNERS. I want you to explain it to me.

Mr. THOMPSON. Will you let me give an illustration, please?

Mr. SUMNERS. Can not you answer that question?

Mr. THOMPSON. No. It is on a piece basis. If it is a piecework scheme he would get one-eighth more. He would get $9 for the shoes.

Mr. SUMNERS. Let us suppose it is not piecework, and he turns out one-eighth more than the average man.

Mr. THOMPSON. That is not piecework?

Mr. SUMNERS. Yes; not piecework.

Mr. THOMPSON. What would it be if it was not piecework?

Mr. SUMNERS. A day's work.

Mr. THOMPSON. For a day's work he would get a day's pay and would not get any more.

Mr. SUMNERS. What incentive is there for a man to increase his activities under your bonus system? Where does your bonus come in?

Mr. THOMPSON. That is just what I am trying to explain.

Mr. BROWNE. Can not you explain that so as to put it on a day basis?

Mr. THOMPSON. Let us assume——

Mr. BROWNE (interposing). Put it 50 cents a day.

Mr. THOMPSON. We will assume that a man is earning $8 a day, regardless of what he makes. We won't say anything about pairs of shoes or anything. Eight dollars is the standard day's wage. Now, we will say to a man that if he will make 12 pairs in a day that he will get $12. If he makes 12 pairs then he will get $12. If he makes 10 pairs, he gets $8. Now, the idea is that this standard that he works to, this $12 standard, is a high standard to work for, and a man will aim to get that $12, and will have the incentive to get this high pay, which would be higher than he would get on a piecework basis, because the piecework would be on a smaller rate per piece, and instead of being at a dollar, say, per pair, it would be 90 cents, or something like that. You give him a high standard, and a high reward, so that he works for that reward, and he gets the $12 when he makes the 12 pairs of shoes. Does that answer your point?

Mr. SUMNERS. Yes, sir; but I can not see why you could not use nine hours.

Mr. BROWNE. Mr. Thompson, are there any systems similar to the Taylor system in use in any of the European countries, Germany or England, or any of the European countries?

Mr. THOMPSON. Yes.

Mr. BROWNE. Which ones?

Mr. THOMPSON. In France they have done a little, a little in England, and a little in Germany. What I mean by a little is, according to the straight Taylor system. They have gone a good way in certain features, in certain features of the management.

Mr. BROWNE. Is this system agreeable to laboring people throughout the United States, in private institutions?

Mr. THOMPSON. Where it has been introduced, it is agreeable. I do not know of any cases where it is not agreeable, and I have got letters from a lot of employees similar to this one that I have here where they tell how much they like the system.

Mr. BROWNE. Have you kept track of whether the accidents are greater?

Mr. THOMPSON. I have records and letters from employees in which some of them say they have kept records of accidents, and have got some records with reference to insurance that they have paid, and the tendency is for accidents to decrease. The reason for this is that when you analyze your work and go into the details of methods and of machines, and so on, the whole adjustment has to be made so much better and there is less chances for accidents than there is under the old methods of management.

The ACTING CHAIRMAN. Mr. London?

Mr. LONDON. Without going into details, isn't scientific management calculated to simplify the process of production? I say, without going into details.

Mr. THOMPSON. Yes.

Mr. LONDON. That is the main object of scientific management?

Mr. THOMPSON. Yes.

Mr. LONDON. To subdivide a complex process into as many simple processes as possible.

Mr. THOMPSON. To subdivide; yes. I will say that tentatively.

Mr. LONDON. According to your technical language?

Mr. THOMPSON. Yes; that is true so far as studies are concerned, but not necessarily the subdivision of the work. For instance, we do not get a different man cutting a corner and——

Mr. LONDON (interposing). But you subdivide a complex process into simpler processes?

Mr. THOMPSON. I do in the studies. Whether or not you do with your employees depends on the class of work.

Mr. LONDON. But if the work lends itself to that?

Mr. THOMPSON. Yes; but it lends itself to combination, too, because you can figure if a man is doing different types of things, you can figure it just as well, and you don't have to subdivide so much in certain cases. There is nothing in the time-study method that makes it more necessary or less necessary to subdivide.

Mr. LONDON. Now, is the bonus system essential to scientific management or is it an improved method of stimulating work on the part of labor?

Mr. THOMPSON. I would say yes, as compared with other forms of payment, such as piecework. I would say that the bonus was not necessary to scientific management, for you can have scientific management with piecework; but I would say that I like the bonus much better, because it works much more smoothly, and the workers like it better, in my personal experience.

Mr. LONDON. Now, what are the essential features of scientific management? After all, if it is scientific, it should be simple; otherwise it can not be scientific.

Mr. THOMPSON. The essential thing in scientific management is the actual scientific study and treatment of all features and parts of the work, including the study of the processes, the study of the methods of work, and the study of the times of doing work, time study in a broad sense covering the whole process.

Mr. LONDON. Here we have a definition of scientific management. Let us see if it meets with your approval.

> Scientific management includes the critical observation, analysis, and classification of all industrial and business phenomena, and the systematic application of the results of the resulting records to securing the most efficient production and distribution of products, and to make preparations for future development.

Mr. THOMPSON. I think that is very good.

Mr. LONDON. Then two other paragraphs follow:

> Its most permanent element is the mental attitude which consciously applies the principles of scientific investigation to all the phenomena of business, and the transference of skill to all its activities.

Now, in determining what should be paid to a man, do you start out with a minimum below which you would consider that you are doing a wrong to an employee?

Mr. THOMPSON. A minimum wage, you mean?

Mr. LONDON. Yes.

Mr. THOMPSON. Yes.

Mr. LONDON. You start out with the idea that a certain minimum wage is necessary?

Mr. THOMPSON. Yes.

Mr. LONDON. Necessary for what purpose, to keep the man alive?

Mr. THOMPSON. No. I don't call it a minimum wage. We don't have a minimum wage in the sense that it is a low wage. We have for the wage of a man the wage that is determined by the conditions of the manufacture, the local conditions, and all these other conditions just about the same way that you fix the wage in any business.

Mr. LONDON. Let us see, when you used the word "bonus" you used it in the sense of extra compensation, did you not?

Mr. THOMPSON. Yes, for extra compensation.

Mr. LONDON. What we want to know is, before you come to determine what shall be the extra compensation, have you any method of determining what shall be the ordinary compensation?

Mr. THOMPSON. No scientific method.

Mr. LONDON. No method. We are assuming that everything we say here is scientific. You have no method of determining what shall be the ordinary wage, have you?

Mr. THOMPSON. No; no more method than——

Mr. LONDON (interposing). Than the law of supply and demand?

Mr. THOMPSON. That is it.

Mr. LONDON. Now, if the law of supply and demand, or the particular condition surrounding the labor market is such that the ordinary wage is not sufficient to enable a man to earn a livelihood, then your bonus would be on a false basis, would it not?

Mr. THOMPSON. If the wage, the original wage——

Mr. LONDON (interposing). If your original wage is inferior to your main standards, then the bonus would not be of much help to the worker.

Mr. THOMPSON. Put it on the other basis that you spoke of, the basis of the law of supply and demand. If the wage is below that required by the law of supply and demand——

Mr. LONDON (interposing). No wage is required by the law of supply and demand. Supply and demand may determine what wages are to be paid at the particular time and the particular place. What I am interested in is this: Employers and scientific experts decide upon methods of compensation, or are supposed to decide upon methods of compensation. They provide extra forms of compensation in the form of bonuses?

Mr. THOMPSON. Yes.

Mr. LONDON. What I am trying to get at is this: Is there any law or rule, other than the law of supply and demand, which determines what shall be the regular compensation of a worker?

Mr. THOMPSON. None that I know of; no.

Mr. LONDON. In other words, if the condition of the labor market is such that the regular wage is far below the minimum required to give a man the means to live, then you do not provide him with sufficient means to support himself under your scientific management? I wonder if I express myself? Have I made the question clear?

Mr. THOMPSON. Yes, sir; you have made it clear. You are getting into such an economic problem.

Mr. LONDON. That is the question in which we are interested; that is the prominent question.

Mr. THOMPSON. I will say this, under scientific management, the base wage is usually somewhat higher than the wage that is prevalent in the community.

Mr. LONDON. It is somewhat higher?

Mr. THOMPSON. It is a little higher, but it does not fix it according to the working conditions or the minimum wage question.

Mr. LONDON. In other words, in determining the efficiency of the human machine, you do not ask how much bread, how much food, how much shelter, how much recreation, or how much education that human machine needs in order to be an efficient machine, to start out as an efficient machine. You do not ask yourself that question, do you?

Mr. THOMPSON. We will have to say—I say no; I will say no, we do not.

Mr. LONDON. In examining the ordinary machine which is used as a machine for producing things, you do examine the efficiency of the machine itself, don't you?

Mr. THOMPSON. Yes.

Mr. LONDON. But you do not do it when it comes to the human machine.

Mr. THOMPSON. Well, now, I am going to——

Mr. LONDON (interposing). That is a simple question.

Mr. THOMPSON. What is that?

Mr. LONDON. I say it is a simple question.

Mr. THOMPSON. The trouble is on that sort of thing you can not get away, as I can see, from the law of supply and demand in fixing wages.

Mr. LONDON. We will leave that to the political economists of the orthodox school.

Mr. THOMPSON. You have got to take that into consideration.

Mr. LONDON. We will leave that to the old economists.

You are new scientific managers and the teachers of the new law of economics, aren't you?

Mr. THOMPSON. We do not claim to be perfect.

Mr. LONDON. I know; I do not expect you to be perfect.

Mr. THOMPSON. I will say this, that scientific management goes further in that sort of thing and in making careful studies of the worker and in paying them enough earnings that they will be in satisfactory condition and have better living conditions than any other method that I know of, and that is taken into account, but it is not taken into account scientifically. We have not got so far as that.

Mr. Feist just says that he does do this; that he takes stock of this every hour, and he is going to testify to-morrow morning, and he will explain that.

Mr. NOLAN. We are trying to get the testimony here which each one of you gentlemen gives. You are put on here as witnesses, and I will suggest that each one of you answer at the time, if you can.

Mr. LONDON. I am trying to get at the essential facts in this scientific management movement. Large industries will, of course, seek to adopt every new method that will suggest itself as an efficient method, as a more productive method; but in dealing with the human machine, in dealing with the whole people, we are particularly interested in the question whether these new scientific methods start out with the proposition that they must first of all supply the worker with sufficient means to earn a livelihood. In other words, we have no use for any efficiency method that does not start out with that fundamental proposition. Do you get me now?

Mr. THOMPSON. What are you going to do? Are you going to throw all methods and all of the basic things away, or are you going to adopt them as the best we have, with the idea that the method which does do these things in a scientific way is going to take into account these very things that you talk of? I will say frankly that I have not done that, but that it should be taken into account in a broad sense; that the whole problem should be figured out, and the researches and study and investigations tend toward taking the whole thing into account.

Mr. LONDON. I am afraid I have entered upon a discussion, and I will give somebody else a chance.

Mr. NOLAN. Are you an efficiency engineer?

Mr. THOMPSON. I am a management engineer.

Mr. NOLAN. Do you install an efficiency system under what is claimed to be scientific management?

Mr. THOMPSON. I install scientific management.

Mr. NOLAN. Might I inquire whether you install the Taylor system or the Emerson system, or a system of your own?

Mr. THOMPSON. The Taylor system.

Mr. NOLAN. You are engaged in installing the Taylor system?

Mr. THOMPSON. Yes, sir.

Mr. NOLAN. How long have you been engaged in that work, Mr. Thompson?

Mr. THOMPSON. I have been interested—that is, either in installing or in work connected with the studies of the Taylor system, for 20 years.

Mr. NOLAN. You stated you worked in a shop. Did you have any mechanical training, either before or after you had adopted this profession?

Mr. THOMPSON. I graduated at the Institute of Technology, and I worked in a shop after I got out from there, a mill, for two or three years.

Mr. NOLAN. Were you employed by Mr. Taylor?

Mr. THOMPSON. I did engineering work. How is that?

Mr. NOLAN. Were you employed by Mr. Taylor?

Mr. THOMPSON. At one time, yes; I have been associated with him for a good many years after this.

Mr. NOLAN. But you are now in business for yourself?

Mr. THOMPSON. Yes.

Mr. NOLAN. You spoke of taking up the work for some unions. I just only want you to indicate the name of the union. I do not know that you stated it at the time you started out?

Mr. THOMPSON. I do not know that I am at liberty to say that. It was a private matter.

Mr. NOLAN. Well, of course, we do not want you to divulge any confidences. I did not know but what it was common knowledge?

Mr. THOMPSON. I had just as soon tell you personally or other members of the committee.

Mr. NOLAN. I just thought probably you overlooked stating the name of the organization?

Mr. THOMPSON. No.

Mr. NOLAN. You spoke of a Mr. Valentine?

Mr. THOMPSON. Yes.

Mr. NOLAN. Is he associated with you in your firm?

Mr. THOMPSON. No; except this one particular proposition, he is not associated with me.

Mr. NOLAN. Is that the Mr. Valentine——

Mr. THOMPSON (interposing). Robert G. Valentine.

Mr. NOLAN (continuing). That was associated with Mr. Hoxie and Mr. Frye?

Mr. THOMPSON. Yes.

Mr. NOLAN. He is a scientific management expert, or engineer?

Mr. THOMPSON. No; he is an industrial expert. That is, that is what he gives his title as.

Mr. NOLAN. Is he engaged in similar work with you?

Mr. THOMPSON. No.

Mr. NOLAN. As I understood you, you said that the only way in which you know to test the piece prices was through the stop watch or time study—the only sensible way?

Mr. THOMPSON. The only accurate way; and, yes, the only sensible way.

Mr. NOLAN. And you said that you did not know of any way that was in existence in the matter of setting prices on a large scale, piece prices on a large scale, without the stop-watch or time-study system?

Mr. THOMPSON. On most classes of work, yes; as a general proposition; that is, I do not know of any way of setting them accurately.

Mr. NOLAN. Do you know anything about the system adopted by the stove molders and their employees, the members of the national association in the stove shops?

Mr. THOMPSON. No; I do not.

Mr. NOLAN. Do you know that they have had a system of setting prices for 26 years?

Mr. THOMPSON. I understood that they used the stop watch—in setting——

Mr. NOLAN (interposing). I will disabuse your mind on that. They do not use it, and the men would not stand for it for a moment. I happened to be a party to it on one part. That is why I make that statement so emphatically, that there is no such thing as a stop watch, or a watch of any kind, used in the setting of prices in the stove shops; and I would advise you to become familiar with their system, so that you will see that there is a system in vogue in this country which has in effect a common-sense method of setting prices between employer and employee.

Mr. THOMPSON. You will notice that in general I qualified that statement, that I did not know of any system, that I did not know any way in which it could be done, except by a stop watch. I said for most classes of industry.

Mr. NOLAN. If a class of work such as a stove business, which is more or less of a representative character, and which is ready at all times to accept advantages in methods of holding—and one stove is almost the same as another stove, except for the design, and the form, or something like that—they have set piece prices for 26 years, and never attempted to use a stop watch.

Mr. THOMPSON. May I ask a question? It involved how long it would take to do the work, did it not?

Mr. NOLAN. The whole thing is set on a time basis. Everything is done by comparison.

Mr. THOMPSON. Comparison as to how long it would take?

Mr. NOLAN. No; comparison on a similar line of work.

Mr. THOMPSON. As to how long it would take?

Mr. NOLAN. No; as to what other work pays; and if there was any improvement in the new job, as to whether it ought to be more, or if there was a benefit to the employer.

Mr. THOMPSON. As to how much he ought to receive?

Mr. NOLAN. Yes.

Mr. THOMPSON. And that is based on the time that it takes.

Mr. NOLAN. Yes; that is based on the time that it takes.

Mr. THOMPSON. So that you really get down to the time basis as we do?

Mr. NOLAN. You get down to a common-sense method of computing time.

Mr. THOMPSON. But it is a time basis?

Mr. NOLAN. Without a time-measuring device or a stop watch.

Mr. THOMPSON. You use an ordinary watch?

Mr. NOLAN. You do that in a day's work.

Mr. THOMPSON. Yes.

Mr. NOLAN. There is not any objection, I do not think, to the fact that a man will say that this job ought to be done in an hour. If you work eight hours, you ought to make eight of them in eight hours.

That is a fair day's work. That is the common-sense method of setting that, but this bill seeks to eliminate the split-second stop-watch timing.

Mr. THOMPSON. Your time on this particular class of work—it might be that you can get your time near enough by your over-all time; that is what your time is based on.

Mr. NOLAN. In other words, to make it as short an illustration as possible. There is not any difference in setting prices in the stove shop and setting a day's work in an ordinary foundry. The proposition is left to the men, employer and employee, to come to some sort of a mutual understanding on a common-sense day's work, mutually satisfactory to both parties, and the element of time always enters into it.

Mr. THOMPSON. That is, requiring a certain amount of work in molding.

Mr. NOLAN. In a day, or setting the piece price.

Mr. THOMPSON. Then, you really have a bonus for a standard time just the same?

Mr. NOLAN. Everything is time. Your day's work is time. The number of your hours is a certain amount of time. So time always enters into it.

Mr. THOMPSON. The only distinction that I can see in this particular class of molders—different types of work are so closely allied that you generally have to get down to the units. My point is this, that whereas in this particular type of work you may not need this in 99 cases out of 100, in order to fix your standard time, you have absolutely got to go into these detailed units in order to get it accurate, and if you do not get into these accurate units, you will not get the correct time.

Mr. NOLAN. Let us get right down to the essential basis, as I understand it, about this stop watch and time-measuring system. Under the piece-price system that I illustrated, the man that performed the operation, or the operative, as you call him, is taken into consideration, and bargains with his employer. Under your system the individual or operator has nothing whatever to do with the setting of the price. Is not that a fact?

Mr. THOMPSON. The price is set by the time study man. There is no objection——

Mr. NOLAN (interposing). And the operator is not consulted as to whether that is satisfactory to him or not. It is satisfactory; is that not right?

Mr. THOMPSON. He has a right, though—as far as the setting is concerned, it is a matter of scientific study, and the actual time is taken.

Mr. NOLAN. That is what I wanted to get at.

Is not that just exactly the great complaint among the operators, the men that do the work, that they are not taken into consideration at all in the question of fixing the hourly rate, or the day rates, or the task, or the amount to be paid by the piece?

Mr. THOMPSON. I am glad that you brought that up, Mr. Nolan, because I never knew any objection on the part of the operators to any of those things, and I have been in a great many cases.

Mr. NOLAN. Isn't that for this simple reason: That it is not your business?

Mr. THOMPSON. What is not?

Mr. NOLAN. To deal with the operatives.

Mr. THOMPSON. Oh, yes; it is.

Mr. NOLAN. Let us see whether it is or not. When you go into a shop and apply this system, you come in under contract with the employer. Is not that a fact?

Mr. THOMPSON. Yes.

Mr. NOLAN. And you are employed by him?

Mr. THOMPSON. Unless I am doing it for the unions.

Mr. NOLAN. Yes; but I am talking now generally of how the system is installed. It is the first time I ever knew that any organization had taken advantage of this system; but the ordinary way is that the employer or owner, or the manager of the corporation, employs an efficiency engineer to go into his establishment for the purpose of applying scientific management to that establishment.

Mr. THOMPSON. Yes.

Mr. NOLAN. Wherein do you, as the director of your system, or one of your time study men, consult or confer with the employee himself?

Mr. THOMPSON. They consult with the time study men at every step; I mean, with the operative at every step.

Mr. NOLAN. As to the amount of time he took?

Mr. THOMPSON. That is determined by the watch.

Mr. NOLAN. Then how do they consult him and why do they consult him?

Mr. THOMPSON. They consult him as to the methods of doing a thing, and as to how the work is progressing, and as to whether it is tiring him and as to how he is getting along.

Mr. NOLAN. Do they consult him or advise him?

Mr. THOMPSON. No; they consult him; they ask him.

Mr. NOLAN. Are you willing to stand on that statement?

Mr. THOMPSON. Yes.

Mr. NOLAN. Then probably we will get somewhere.

Mr. Thompson, what training does the ordinary time-study man have to qualify him for this important work? For instance, I want to make it clear, so that there will not be any issue here. You want a number of time-study men in connection with your business. What training or what instructions do you give them to qualify them for this work, so that they will study the movements of a man by timing with a stop watch, and also take into consideration the amount of energy used, the question of exhaustion, and all of the human element involved in the work of an individual when he is under this stop-watch system, as to what should be a fair day's work for the employer and what should be a reasonable task—what training do these men get?

Mr. THOMPSON. My associate, Mr. Lichtner, has been in time-study work for a great many years, and if we go into a shop in that way, he takes charge of the time study himself, and he directly trains the time-study men who are working in that shop. He shows them how to do it, and he takes time alongside of them, and he works up their time and shows them how to do it.

Mr. NOLAN. How long does it take the average man, or how long do you give instruction to the average man, so that he might be considered proficient to be a time-study man?

Mr. THOMPSON. That depends upon the type of man, of course, and he has got to have a good foundation—that is, he has got to be a man who is capable of handling that work; whether he is a mechanic. Sometimes we take a time-study man from the shop; sometimes we take a man from outside who has had experience in shop work of different kinds. We take him usually if we can from the shop where we are doing the work.

Mr. NOLAN. How long does it take ordinarily to instruct one of those men so that they are proficient?

Mr. THOMPSON. With the proper training, possibly a couple of years before you can reasonably be sure he can go it alone in good shape.

Mr. NOLAN. Do you take him under your wing all of that time?

Mr. THOMPSON. Yes.

Mr. NOLAN. In the shop?

Mr. THOMPSON. Yes.

Mr. NOLAN. Suppose you have a number of them; how do you work that out?

Mr. THOMPSON. A number of shops?

Mr. NOLAN. A number of men in any particular shop.

Mr. THOMPSON. In the same way.

Mr. NOLAN. Do you take them in groups, and instruct them?

Mr. THOMPSON. Individually.

Mr. NOLAN. Do you have any group of men connected with your establishment who are time-study men?

Mr. THOMPSON. Yes.

Mr. NOLAN. How many?

Mr. THOMPSON. Well, I have several. I make it a plan when I take hold of a piece of work to have the man on the job who understands time service pretty thoroughly, even if he does not do the detail work. Sometimes he may and sometimes I may employ other men.

Mr. NOLAN. Coming back to that proposition of taking two years to educate a time-study man in an establishment. You pick out some man in the establishment or a man from outside whom you think is qualified and put him in there.

Mr. THOMPSON. Yes, sir.

Mr. NOLAN. And he is the time study man for the establishment. Is that right?

Mr. THOMPSON. Yes.

Mr. NOLAN, It takes two years to educate him to do that work?

Mr. THOMPSON. That is, roughly speaking. Some kinds of work he can learn to do in less time and some kinds more.

Mr. NOLAN. That man has to do with the setting of a task, computing the day's work for the men in that shop during those two years that he is becoming drilled and trained as a time study man?

Mr. THOMPSON. Very little until toward the end of the two years. That is, I always plan to have the setting of the task directly under myself or my associates, or one of my experienced men.

Mr. NOLAN. How long after you go into that shop do you start in to put the task system into effect? Do you start to do it immediately, or do you wait until these men are qualified to set those tasks, and do you wait two years to do that, or do you start in from the beginning?

Mr. THOMPSON. In some places you have to wait two years before you set any task, and in others you start inside of three or four or five months; not usually before six months.

Mr. NOLAN. You say here that no tasks are set ordinarily under this system until five or six months, and from that until two years?

Mr. THOMPSON. That is my practice, yes.

Mr. NOLAN. That is your practice?

Mr. THOMPSON. Yes.

Mr. NOLAN. Of course, I would only ask you from your own practice. You do not start to put it into effect, and the men do not attempt to work under it. In other words, you do not cut down the time on a job. You do not apply the knowledge acquired through the stop watch, time study, and other methods that are used to determine results under this system until after five or six months?

Mr. THOMPSON. Yes.

Mr. NOLAN. The men go along in the old groove all of that time?

Mr. THOMPSON. Yes.

Mr. NOLAN. And nothing is attempted to be done with them?

Mr. THOMPSON. The point is that in order to get ready for this there is a whole lot of other parts of the work to be done. You have got to have a standard; you can not begin to take time studies right away for the purpose of standardizing materials and the employees. You have got to get the supply of materials in shape; you have got to get your materials so that they are standard.

Mr. NOLAN. You are standardizing the work of that establishment when you go in there? That is a part of your work?

Mr. THOMPSON. Yes.

Mr. NOLAN. It does not make any difference where it is out of line, it is your duty to find out just where it is out of line and to standardize it?

Mr. THOMPSON. Yes.

Mr. NOLAN. What I want to get at is, how long, ordinarily, does it take from the time you enter the shop before the men go to working under this so-called time-efficiency system? And the time it takes to educate these people to their jobs?

Mr. THOMPSON. The time is six months to two years.

Mr. NOLAN. Do you know whether Mr. Taylor followed that same idea or not, always?

Mr. THOMPSON. I think so.

Mr. NOLAN. I did not catch the name of the city that that letter came from up in Connecticut.

Mr. THOMPSON. New Haven. The letter is dated Whitneyville, Conn., but he works in the Acme Wire Co., in New Haven.

Mr. NOLAN. Have you undertaken to standardize that silk mill that you spoke of a while ago?

Mr. THOMPSON. No.

Mr. NOLAN. If not, I do not believe I ought to ask any questions on it. I was going to ask you, but inasmuch as you did not have an opportunity to study all of the conditions there, I think it would be unfair. You stated that you did not know of any instance where scientific management had been installed to any considerable extent where your employees made any complaint. Did I understand you aright to that extent?

Mr. THOMPSON. I know from hearsay that the Watertown Arsenal—that some of the men made complaints. I am speaking about my own practice, and other shops that I have known about directly that I have been in, and that I have been associated with either directly or indirectly and been through, and I never had any experience of that kind. I do not know anything about the Watertown Arsenal situation, and so I am not qualified to answer any questions about that; but I will say this, that if it is a fact that the men at the Watertown Arsenal dislike the system—and I am not at all sure that they do—it is an extremely exceptional case. I have got hundreds of letters—I will not take time to read them now—but I have got a lot of letters from employees similar to this one which I have read, showing actually what they think about it.

Mr. Nolan. Inasmuch as I did not have a chance to get a line on that last question, I want to ask you one more. Mr. Sumners here put a hypothetical question regarding something in relation to the premium or bonus system, and he cited a case where a man might make eight pairs of shoes a day and receive $1 per pair. That is, eight would be the task set under time study.

Mr. Thompson. I said 12 would be the task.

Mr. Nolan. But get it down to Mr. Sumner's question. Mr. Sumners put a hypothetical question here about eight pairs per day; that is, provided you went into an establishment and you decided that eight pairs of shoes a day, after careful study, was a task for the individual man.

Mr. Thompson. And required a bonus payment?

Mr. Nolan. Just a moment. And he was receiving a day's pay of $8 per day, and you were required to set a day's work for that $8. What did you say he would receive providing, after producing the task suggested by you, he should produce one pair more, making nine pairs—what did you say he would receive for the ninth pair?

Mr. Thompson. I have to ask you again whether $8 is his daily wage?

Mr. Nolan. Yes, sir; that is it.

Mr. Thompson. I would say again that by the premium system he would get one thing; by the bonus, another. By the bonus I would say—that, you say, is a day's wage—the point is right here.

Mr. Nolan. Let me get this question right here. Say he was making $8 a day and only making five pairs of shoes?

Mr. Thompson. Yes; that is better.

Mr. Nolan. He was getting $8 a day?

Mr. Thompson. Yes.

Mr. Nolan. And he was making five pairs of shoes a day?

Mr. Thompson. Yes.

Mr. Nolan. You went in there at the request of the manager?

Mr. Thompson. Yes.

Mr. Nolan. To install the system?

Mr. Thompson. Yes.

Mr. Nolan. After installing the system you set, according to your time studies, eight pairs of shoes as a day's work, a task.

Mr. Thompson. Yes.

Mr. Nolan. And he would receive for that the basic rate of $8?

Mr. Thompson. No.

Mr. Nolan. Hold on.

Mr. Thompson. That is wrong.

Mr. Nolan. Let us see whether it is or not.

Mr. THOMPSON. We never set a task on a piece base work. We set the task on what he ought to have done if he had done an especially good day's work.

Mr. NOLAN. You do set tasks under the daywork system?

Mr. THOMPSON. No.

Mr. NOLAN. Well, the Taylor system does?

Mr. THOMPSON. Yes, but not for a day's work. He gets his day's pay out of what he does, and if he does the standard amount of work he gets $9, we will say.

Mr. NOLAN. Your system means that you would go in there and you would introduce new methods?

Mr. THOMPSON. Yes.

Mr. NOLAN. Whereby you say that that man would not do any more to accomplish——

Mr. THOMPSON (interposing). That is, would not work any harder?

Mr. NOLAN. Would not work any harder, and that you introduced scientific methods whereby that man, instead of producing five pairs of shoes a day, would be enabled, with the same effort or less effort, to produce eight pairs of shoes a day?

Mr. THOMPSON. Yes.

Mr. NOLAN. And that you were in there for the purpose of taking up the slack, if we can use that term?

Mr. THOMPSON. Yes.

Mr. NOLAN. And supplying scientific methods to meet the output, and you do meet the output, so that that man did not have to use any more energy in the production of eight pairs of shoes than five, you would not change the pay? It still remained at $8?

Mr. THOMPSON. I would not do that.

Mr. LONDON. I think the figure "8" is too big. We are all getting confused.

Mr. NOLAN. To show that this system, as this committee has got it of the proponents of the Taylor system, and I think as Gen. Crozier would probably testify, as he will if he is here to-morrow, and as he has done in days gone by, that they introduced methods in the Watertown Arsenal whereby the production of the individual worker, who was receiving $3.24 per day, was increased 274 per cent.

Mr. THOMPSON. Yes.

Mr. NOLAN. Now, for that increased production he only got $3.24.

Mr. THOMPSON. What was his wage before?

Mr. NOLAN. $3.24.

Mr. THOMPSON. You mean he got the same wage during this time?

Mr. NOLAN. Yes, sir.

Mr. THOMPSON. There I think you are absolutely wrong.

Mr. NOLAN. We can take that from his testimony.

Mr. THOMPSON. I think you will find that he got one-third more.

Mr. NOLAN. No; after they set the task.

Mr. THOMPSON. When they set the task they gave him an extra amount?

Mr. NOLAN. But Gen. Crozier took the position that they introduced new methods.

Mr. THOMPSON. Yes.

Mr. NOLAN. That made it possible for the man to produce this much more?

Mr. THOMPSON. Yes.

Mr. NOLAN. Without any increased effort on his part?

Mr. THOMPSON. Yes.

Mr. NOLAN. And that the United States Government was entitled to that 274 per cent increase of output because it was not——.

Mr. THOMPSON (interposing). At the same pay that he was getting before?

Mr. NOLAN. Yes.

Mr. THOMPSON. Absolutely no. I am dead sure of that. I want you to ask Gen. Crozier as to that.

Mr. EMERY. There is a sentence here from Gen. Crozier's statement that I think if you will permit me I will read it to you.

Mr. NOLAN. I want to get the page.

Mr. EMERY. This is an address that he made this winter. He says here:

> Some of the conclusions of the reports are very curious; one of them, for instance, says that the claim of increased earnings for the workman was shown to be unfounded, and that as a matter of fact wages were reduced. This conclusion was worked out by showing that if a man did two and one-half times as much work under the premium system and received only 33⅓ per cent more pay, his pay per unit of work must have been less, which the committee called a decrease of wages, notwithstanding the fact that by this kind of operation, a $3 a day man would earn $4 in the same length of time.

Is that the point?

Mr. THOMPSON. That is the point I made; that he does get more pay.

Mr. NOLAN. Then, let us find out. If you set the task at eight pairs of shoes, and you consider $8 a day a fair rate for eight pairs of shoes, what would that employee get either under bonus or premium system for the ninth pair of shoes that he made?

Mr. THOMPSON. I will have to ask again whether that $8 is a day wage.

Mr. NOLAN. No; you are setting the $8 for this eight pairs of shoes. I am leaving it right up to you now. You set $8 and set eight pairs of shoes which must be made for the $8. What would you give him for this ninth pair?

Mr. THOMPSON. Was his day wage $6, we will say? That includes a bonus?

Mr. NOLAN. Leave out that question of bonus up to $8. Leave out the conditions that he worked under prior to that time; but after you have given him the job.

Mr. THOMPSON. Yes.

Mr. NOLAN. And decided that within any given time—within a day—that eight pairs of shoes be accomplished, we will say, in eight hours' time, and he got for that work $8. Suppose he happened to produce that eight pairs of shoes in shorter time than eight hours, which was the day's length, and it permitted him to make a ninth pair of shoes. What would he get for that ninth pair of shoes?

Mr. THOMPSON. If he was on a piecework basis he would get $9; if he was on a bonus basis it would not be fixed that way at all.

Mr. NOLAN. What would he get on a bonus?

Mr. THOMPSON. If he made 9 pairs of shoes you would give him $9. His day wage might be $8 before. That would be a very small increase; now, you say 9 pairs of shoes is a good day's work. "If you can make 9 pairs of shoes I will give you $9." You do not care anything about anything else. You do not care anything about what he would make if he was working on a day rate.

Mr. SUMNERS. Suppose he makes 10 pairs of shoes, what would he make?

Mr. THOMPSON. In some types of bonus, he would get the extra dollar, and get $10. In other types of bonus, we feel that the ninth is as much as he ought to make, and after that we do not give him a similar increase.

Mr. NOLAN. He would not get $10 for that?

Mr. THOMPSON. Not always. It depends. For instance, on the type of work Mr. Towne was speaking of, he gets the work increased right away; in other types of work you set a task with the human element in view, and the effective point in that is that you say a fair task is nine shoes. I am not going to pay that man any more if he makes 10 pairs of shoes; because I do not want him to make 10 pairs. Nine pairs of shoes is enough for him to make.

Mr. NOLAN. Then your system also stops the opportunity of the individual?

Mr. THOMPSON. It stops him from overdoing.

Mr. NOLAN. It does stop him from overdoing.

Mr. THOMPSON. In this type of work it does.

Mr. NOLAN. By penalizing him in that way?

Mr. THOMPSON. He never does it.

Mr. NOLAN. I do not see why he should.

Mr. THOMPSON. He does not.

Mr. NOLAN. If you are going to bring down the pro rata amount per unit.

Mr. THOMPSON. Take it in a shop like that, and the average man is almost identical with that man. They do not overrun it, because the employer does not want them to and does not offer them any incentive.

Mr. NOLAN. Is that the reason given for Gen. Crozier's 274 per cent with only 33⅓ per cent increase in wages?

Mr. THOMPSON. He works on a different plan. Where there is an increase with the amount done, which I think varies directly with the amount put in, the idea being that in most of the types of the machine shop work that he has, so much of it is machine work that the extra amount does not tire the man.

Mr. NOLAN. Now, Mr. Thompson, in all fairness, if you could not illustrate to this committee on a simple proposition of this kind how a bonus or premium system could be applied, how in God Almighty's world could you expect it to be agreeable to the men in the shop?

Mr. THOMPSON. It is surprising how the men in the shop can figure all kinds of things, as you know, when it comes to the amount you earn.

Mr. NOLAN. You could not give it to the committee on this simple example.

Mr. THOMPSON. My point was right here that you and Mr. Sumners both were starting out on a day work basis, and I could not understand whether you were driving at the day wage or the bonus wage. The bonus plan does not take into account what the man does when he is getting just his day's pay, because the question is to get the bonus up and not the day's pay. That is the point that I was trying to explain to you.

Mr. KEATING. As I understand it, you advocate the Taylor system and are installing the Taylor system in your business?

Mr. THOMPSON. Yes.

Mr. KEATING. Let me ask you if Gen. Crozier has made an accurate statement of the bonus system in this quotation from his annual report for the fiscal year ending June 30, 1911, page 17:

> For example, a workman has been doing a piece of work in 190 minutes. After a painstaking study of the job, and of all the means of saving time, the man is carefully instructed as to these means, and is told that for every minute saved within, say, 120 minutes, he will be paid for half a minute at the regular rate, in addition to his regular daily pay; and that it is thought that he can do the work in 72 minutes, for which time the increase over his regular pay will amount to 33⅓ per cent.

Is that a fairly accurate statement?

Mr. THOMPSON. That is a fairly accurate statement of what is termed the "premium method of pay."

Mr. KEATING. Gen. Crozier described it as the bonus system.

Mr. THOMPSON. Gen. Crozier is not quite correct in calling that the bonus system. It is more technically the premium system.

Mr. KEATING. And we will not be able to consider Gen. Crozier as a technical witness or an expert witness in considering this system? He is not to be regarded as such?

Mr. THOMPSON. I said that he is not generally considered so; those are relative terms and they have not been in use for very long, and they are used synonymously to a limited extent, and used interchangeably, and I am talking about as a general rule the other term is used as a bonus and this is used as a premium plan. It is really a bonus—I want to qualify what I say. A premium is really a bonus plan.

Mr. KEATING. I will come to that in a moment. I want to get, first of all, the accuracy of this particular statement by Gen. Crozier. Gen. Crozier says that a workman has been doing a piece of work in 190 minutes; that he is then timed, so that those timing him conclude that the work can be done in 120 minutes; and then the workman is told that it is thought he should be able to do it in 72 minutes, and if he cuts the time in which the particular task is to be performed from 190 minutes to 72 minutes, his salary will be increased 33⅓ per cent; is that right?

Mr. THOMPSON. Yes.

Mr. KEATING. And the workman receives as compensation pay for one-half of a minute of time for each minute that he saves under the 120 minutes?

Mr. THOMPSON. Yes.

Mr. KEATING. All right. Senator Borah in his report on a bill like the one we have under consideration, makes this statement concerning Mr. Taylor's plan, which is known as the differential rate:

> If it is discovered that the maximum number of pieces of work which a first-class workman can do in a day is 10, he will receive 35 cents apiece, provided he completes all 10 of them. If, however, he should fail to complete the 10 pieces, even if his task is missed by only 10 minutes, he would get only 25 cents apiece for all of them, thus making the workman's wage for the day only $2.50, instead of $3.50, for running behind 10 minutes on his schedule time. This arrangement furnishes him a powerful incentive to work at his utmost.

Is that a fair statement of the differential rate?

Mr. THOMPSON. So far as I could follow it, that is a true statement.

Mr. KEATING. Can you state briefly to the committee the difference between the piece rate and the bonus system?

Mr. THOMPSON. The ordinary piece rate, you mean? You do not mean the differential piece rate, or do you?

Mr. KEATING. No.

Mr. THOMPSON. The ordinary piece rate; a man gets so much for a piece, we will say 20 cents per piece, no matter how many he makes. He may get less than a day's wage in making those pieces or he may get more than a day's wage—that is, there is no limit either way.

On the bonus system he is guaranteed a day's wage, no matter how many he makes. He is given, if he makes the standard amount, a bonus of, say, 33 or 35 or 40 or 50 per cent when he does that standard day's work. If he does below that, he gets the day wage.

Mr. KEATING. How do you determine the day's wage?

Mr. THOMPSON. As I said a little while ago, that is determined by the local conditions and, ultimately, from the law of supply and demand.

Mr. KEATING. Suppose the day's wage was $3?

Mr. THOMPSON. Yes.

Mr. KEATING. What would be your standard wage?

Mr. THOMPSON. The day's wage would be $3 and the bonus wage or the wage for the standard time—that is probably what you have in mind—might be one-third more than that, or $4. The amount varies. The relation between the day's wage and the wage plus bonus varies with the kind of work.

Mr. KEATING. You say that the man would receive $3 without regard to the product he might turn out?

Mr. THOMPSON. Yes.

Mr. KEATING. Do you mean to convey to the committee the impression that you have no standard by which you judge the efficiency of the workingman?

Mr. THOMPSON. You judge the efficiency by whether he does the standard amount, which gives him the $4.

Mr. KEATING. If he fails to earn the standard amount, you regard him as inefficient?

Mr. THOMPSON. Not necessarily; no.

Mr. KEATING. How far could he fall below the standard before you would consider that he was an undesirable workman?

Mr. THOMPSON. If he continually fell below the standard set. If he continually failed to earn this bonus, I would say that he was not fitted for that class of work, or else there was some condition wrong with his machine work. Just as soon as the workman fails to earn this bonus—and that is one point about the bonus system—just as soon as the workman for a few days or a week, fails to earn his full bonus, the conditions are investigated. It is brought right to the attention of the manager; the conditions are investigated to see what the trouble is, whether it is in the man. It is usually the fact that the man is not doing the work in the right way and needs more training, or else that there is some other condition of work that is wrong, or materials: and that is rectified. If he continues to earn below the bonus paid, he should be transferred to some other kind of work.

Mr. KEATING. How do you determine the amount of work which shall be performed in order to earn the standard wage?

Mr. THOMPSON. By time study.

Mr. KEATING. Do you take an ordinary workman as the subject of that study, or do you take one of your fast, skillful workmen?

Mr. THOMPSON. You take a man who is well fitted for his work—if you take the same type of man all the time—that is a little different. It makes no difference in your final result whether you take the fast man or the ordinary man, for this reason: That you always have to add a certain percentage, which depends on the class of work, and in which there are certain rules, and so on. You have to add a definite percentage if you are using a first-class man, and you add 1 per cent; if you are using your average, ordinary man, you add another per cent; so that you get the same result, and the result you get must be such as will aplpy to the average man in the shop. In other words, you base it on the average man.

Mr. KEATING. Then, to get back to the shoes: You take an ordinary workman and you put him to the task of making shoes. We are now going on the assumption that the workman manufactures the entire shoe, which we know is not the case, but for the purpose of this illustration. You take an ordinary workman and you time him, and you find that he can make a pair of shoes in an hour; now, what is your standard in that case—in order that the workman may secure a standard wage?

Mr. THOMPSON. You time this one workman and find that he can make an ordinary pair of shoes in an hour. The chances are that you would fix the standard time at higher than an hour, to allow for lost time that you do not get when you are timing him.

Mr. KEATING. And you would increase his salary 33⅓ per cent and allow him more time in which to perform the task?

Mr. THOMPSON. Yes; than when you are watching him.

Mr. KEATING. That is the system that you follow?

Mr. THOMPSON. Yes.

Mr. KEATING. Let me understand that clearly. The shoemaker is earning 50 cents an hour in an ordinary shoe factory in that district. You come along with your efficiency system. You take an ordinary shoemaker and you time him and you find that he makes a pair of shoes in an hour. Then you give him more than an hour in which to perform his task, and you give him an increase of 33⅓ per cent in his wages?

Mr. THOMPSON. Yes.

Mr. KEATING. Is there nothing else that you do?

Mr. THOMPSON. But when you say you time him and find that it takes an hour to do it, I am assuming that that is the time that is based on the improved methods. As I say, you do not produce your task and a bonus until your methods are improved. That is, I was answering the question about the six months or two years. You have got to improve your method and get your things standardized before you can take your final time studies to set your task. After you have got your methods improved you have increased usually without any effort on the part of the men, reduced the time, we will say, from a minute and a half down to a minute. Do you get the idea?

Mr. KEATING. Yes; I see the point.

Mr. THOMPSON. And then on that you add the percentage for delay.

Mr. KEATING. But increase the salary 33⅓ per cent.

Mr. THOMPSON. As a general principle; of course, the percentage in some cases—we have increased 50 per cent.

Mr. KEATING. That is a matter to be determined by the employer.

Mr. THOMPSON. No; that is determined by studies and relation between the percentages that have to be given on work of that type. In other words, that is a standard; one which is much more nearly standardized than the piece wage.

Mr. KEATING. You said in your preliminary statement that one object of your system was to reduce the hours of labor of the workmen.

Mr. THOMPSON. I said that one of the results that we were working toward was that.

Mr. KEATING. Have you reached it yet?

Mr. THOMPSON. Yes; in a number of cases. For instance, one shop where we have been doing work cut down its hours last January as the result of scientific management methods.

Mr. KEATING. Could you give the committee the name of that concern?

Mr. THOMPSON. Eastern Manufacturing Co., Bangor, Me.

Mr. KEATING. What hours were they working before they were cut?

Mr. THOMPSON. Ten hours, which is the standard in that section.

Mr. KEATING. And they reduced to nine?

Mr. THOMPSON. They reduced to nine.

Mr. KEATING. Do you know of any other establishments?

Mr. THOMPSON. Eaton, Crane & Pike, in Pittsfield, has reduced its hours lately. They have been putting in scientific management.

Mr. KEATING. Are there any labor organizations in those establishments?

Mr. THOMPSON. I do not know as to Eaton, Crane & Pike. There is not in the Eastern Manufacturing Co. at Bangor.

Mr. KEATING. You do not know whether labor organizations' efforts had anything to do with it or not?

Mr. THOMPSON. No; they did not. That is, so far as the Eastern Manufacturing Co. is concerned. It was really the result, not simply of the management work, but the indirect result of the management bringing a service secretary there, who looked after the welfare of the employees, and it was with her cooperation and advice that it was brought down to nine hours.

Mr. KEATING. As a rule, under the Taylor system, you have just the two scales of wages, the ordinary wage and the standard. Haven't you a series of bonuses?

Mr. THOMPSON. Sometimes. That depends upon conditions. You have already named three types of pay, the differential pay, the piece rate, and the bonus.

Mr. KEATING. You have a number of rates?

Mr. THOMPSON. There are a number of different methods set out to different things. The main thing and the thing you are cutting out, if you pass this bill, or report this bill, is that you are cutting out the means of scientific study and investigation, and the means of increasing the output through this scientific investigation. The pay is a very small part. You can have your scientific management on piece work. As I say, it does not work so well, but you can have it if you set your rate scientifically.

Mr. LONDON. I want to ask one question, if you are not too tired, Mr. Thompson.

Mr. THOMPSON. All right.

Mr. LONDON. Mr. Emery brought out a moment ago the fact that Gen. Crozier criticized the Committee on Education and Labor in reaching the conclusion that the wages of the workers would be reduced, in spite of the fact that each individual worker would obtain an increase of wages from $3 to $4 a day.

Mr. THOMPSON. That is, his price per piece would be reduced.

Mr. LONDON. His price per piece would be reduced?

Mr. THOMPSON. Yes.

Mr. LONDON. But his earnings per day would be increased?

Mr. THOMPSON. Yes.

Mr. LONDON. And it is based also on the theory that he would do two and one-half times as much work under the premium system.

Mr. THOMPSON. On that particular job.

Mr. LONDON. Let us take that as a basis for our reasoning. Each individual worker does two and one-half times as much work as he did before. He gets, instead of $3 per day, $4 per day.

Mr. THOMPSON. Yes.

Mr. LONDON. He is benefited by obtaining an increase in wages?

Mr. THOMPSON. Yes.

Mr. LONDON. Let us see, then, how it will affect all the workers in that branch of the industry. Assume there are 1,000 workers in that particular branch of the industry. The productivity of each of the workers has increased two and one-half times. That is it, is it not?

Mr. THOMPSON. Yes.

Mr. LONDON. It will therefore not be necessary to employ 1,000 workers any more?

Mr. THOMPSON. No.

Mr. LONDON. We will have to divide it by 2½ the 1,000.

Mr. THOMPSON. You will if the whole shop is on that basis, which of course is rather an unusual ratio. If the whole shop is on that basis.

Mr. LONDON. If the whole shop is on that basis you will have to divide 1,000 by 2½?

Mr. THOMPSON. Yes.

Mr. LONDON. In other words, we will employ but 400 people instead of a thousand.

Mr. THOMPSON. In that assumed case.

Mr. LONDON. And 600 men will then find themselves out of employment, competing with 400 men who have retained their jobs. How long will it take before the 400 men will have their wages reduced under the pressure of 600 men who have been separated from their jobs?

Mr. THOMPSON. Now, of course, the point is here that you are using an extreme case.

Mr. LONDON. I am reasoning the thing out scientifically.

Mr. THOMPSON. At the same time the principle is the same. As it works, of course, that is the same objection that you can raise to the introduction of machinery.

Mr. LONDON. Very well.

Mr. THOMPSON. But there is this difference between the introduction of machinery——

Mr. LONDON (interposing). You will pardon me. What I am trying to get at is this: What is it that annoys the worker, who is very often afraid of the word "scientific," and is afraid of new schemes and devices?

Mr. THOMPSON. Yes.

Mr. LONDON. What inspires fear in his mind is that it will affect his opportunity to earn a livelihood; that it may increase the competition between the workers; that it may result in the discharge of a certain number of employees; and it seems to me that a scientific expert must approach that question from that standpoint before he will satisfy the workers that they should adopt scientific management as a method of production.

Mr. THOMPSON. Of course, we can not go into that economic side of it so much. Of course, it is the same general principle as the introduction of machinery, but with this difference: That scientific machinery is introduced very slowly. It takes a long while to get a shop to introduce new machinery.

Mr. LONDON. In other words, it is medicine to be taken in small doses and rarely.

Mr. THOMPSON. That is about the idea, and it does not affect them so much.

Mr. KEATING. We thank you for your courtesy in appearing before us, Mr. Thompson, if you have nothing further to say.

Mr. THOMPSON. I just want to read one note here from a letter received from a correspondent. He says: "If the United States is to be cut off from the benefits of this sort of management, all I can say is God help her when she gets up against Germany in the struggle for existence."

Mr. EMERY. That conclusion gives peculiar significance to the testimony of the next witness. Mr. Noyes is the general superintendent of the German-American Button Co., of Rochester, N. Y. His testimony will be entirely neutral, nevertheless, but he can speak of a big establishment here, because he is one of the 35 shops that was examined by the committee representing the Federal Industrial Commission, and they employ about 1,000 people, who have operated under scientific management, as installed under the suggestion of Mr. Taylor, during a period of perhaps 15 years.

STATEMENT OF MR. HENRY T. NOYES, GENERAL SUPERINTENDENT OF THE GERMAN-AMERICAN BUTTON CO., ROCHESTER, N. Y.

Mr. NOYES. Mr. Chairman and gentlemen of the committee, I won't take but a very short amount of your time.

It seems to me that the problem before you is whether you will approve of scientific management by doing nothing, or whether you will condemn it by passing the bill before you. The criticisms that you can apply to any system of management would be many, no matter what it is. The way to judge scientific management, perhaps, is to compare it with others. You can criticize scientific management, undoubtedly. You can criticize other systems, undoubtedly. I think the big fact does stand out very prominently to those who do have anything to do with it that it is a big step in advance. I do not think there is a manufacturer who has tried it who will not say that it is a big step in advance.

The question is simply whether you will condemn it or no. I only want to give a few facts regarding it.

In the first place, every plant will give you proof and figures to show that they are paying higher wages than the wages in that community. That is true. That can not be gainsaid. The employees are earning higher wages than the ordinary wages in that community.

Secondly, they will give you proof to the effect that they have advanced wages considerably over what they were in the plants before they introduced scientific management.

Those facts stand out very prominently. There are others, namely, that the plants have a tendency to short hours more quickly than others. I happen to know Mr. Feist, of Cleveland, whom you are to hear to-morrow, and I know that he works shorter hours than any shop in the entire clothing industry. I know that we work shorter hours than any other button factory in any other shop in the country that we know of.

Now, then, as I have listened to you to-night, I can see how much confusion naturally arises in discussing this subject in its details. For instance, there are a great many different methods of payment practiced in shops. I do not think there is one standard method of practice, even under the Taylor system. Some engineers practice one different method of payment; some another. In fact, you will find some engineers that have two or three different kinds. There are different kinds of bonus payments and different kinds of differential pay-rate payments, and it is very hard to compare them. For instance, Mr. Thompson's method is one. Mr. Feist has an entirely different one, and I think Mr. Feist, if he could debate with Mr. Thompson, could give him some arguments as to whether his methods are better than Mr. Thompson's.

Mr. Thompson is a Taylor man, and there are Taylor men who will sit up all night and tell him why their methods are better than his. The thing that stands out bigly is that it is a big step forward.

I have been connected with the industry some twenty-odd years. We used to set piecework by guesswork. We realize how inaccurately it was done. Changed conditions come up to-day. They are not like those which Mr. Nolan mentioned, where things have gone on for years; I believe he said 26 years.

On the way we pay people, they all want to be paid on some scientific basis. People ask us if they are not on it to be transferred to it. This assumes to deal with it in a scientific and relatively just way. It lays great emphasis on being relatively just, as compared with the others—not absolutely but relatively.

Those things are true. I think they stand out against any other system in vogue. They are some of the large things that are done. It is scientific compared with the old methods unquestionably. The basis of it largely is in time study, if you take it in a big sense; study of all the facts that deal with the time of individuals. Your action in condemning it at this time would come at, I believe, an unfortunate period, because I think scientific management has been going through preliminary stages. It is becoming better known to-day than ever before, and I think it is going to make progress from one other standpoint. I think that industry in the past, compared with what scientific management does to-day, looked at a laboring man as a machine and not as a human being. I claim to you that the plants which practice scientific management—that is, the plants as I know them—are dealing with men as human beings up to a far greater extent than they did 10 or even 5 years ago before we knew scientific management.

My own particular business—we have no outside stockholders at all. The people who own the business are all at work every day in the business, and we try to deal with all of them as best we are able. We have more stockholders in the factory than we have in the office, and from time to time we are increasing our stockholders, and it is a plant owned by working people rather than outside capital.

Here is another thing that is very confusing to you good people: When I think of accomplishments through time study, I do not think we get anything through speeding up or putting people to extra efforts. That is not it. We really get results through different means of improving conditions and the like. The results that are obtained are not from speeding up. Very truly they are not. It is a rare case where that ever applies. That is not where we get the results. It is from a study of the conditions, improving them, and the like. So that wherever you introduce it, it throws a tremendous responsibility on the management that it never had before. It is a check on the management. One of the most important things you have to do is to keep your machines in good condition and repair. That is absolutely essential, and that fact alone gives you increased output. Where the operators understand it and know the conditions under which they are working, that serves as a check on you to keep conditions on that basis. It is a check on getting your supplies where they can get them.

The results are not obtained by speeding up, or from this extra effort.

I will also claim this for Mr. Feist. I would like to speak of Mr. Feist's plant, which I know so well. I wish you might visit it. I have visited it a good many times. I take a great deal of pride in our workmen and in their cooperation. I have never found a plant in which you have more cooperation than in Mr. Feist's. A man could not go into that plant of Mr. Feist's and spend half a day without realizing that.

I think that is also true of our own organization. I think that our efforts in scientific management have brought that about. I think that is the tendency.

Here is another thing that scientific management is doing. The plants that are operated under scientific management can not only furnish you the facts regarding higher wages, shorter hours, and the like, but they can prove to you that they hold their employees better than the plants that are not so operated. That is an astonishing fact, but it is true. I do not know of a plant that holds its employees better than Mr. Feist's. I have corresponded with a great many to find out what the average percentage of turnover is. I claim to you that there is not one in Rochester that holds its employees better than we do, and show less percentage of turnover. I stated that I wrote to a great many—I mean that I wrote to seven or eight that are in existence in that city, the larger ones, with whom we have compared figures.

Only one or two little points on the question of accidents. It unquestionably reduces accidents. We have figures to prove it. Our figures are so astounding regarding accidents—we once met a number of accident insurance men in New York City and gave them our figures, and they said that they were the most astounding that they knew of, and they could hardly believe us. We voluntarily assume liability in case of accident to any one of our employees, and we never ask him to sign anything like a liability company would have him do. We keep very complete records of our accidents, far more carefully than the law requires and we did so before the law went into effect, and the amount of lost time over a period of two years, as I remember the figures, was so small that it did not cost us out of 1,000 employees as much as $100. I mean, under the law as it now stands, it would not have cost a hundred dollars. We did not wait for the enactment of the law, however. We do more than the law calls for.

So far as accident cases are concerned, I am sure accidents have decreased. I can give you some very interesting figures regarding health, and I would like to recite only a little bit of the circumstances under which we gathered these figures.

Some six years ago we told our employees that we had a nurse and doctor, and that they were there to be of service to them, and if they wished to have their health examined and suggestions made by the doctor, we would be very glad to have them do so. We give some little health lectures for them to attend, and we paid their wages at the time they were off from their work attending these lectures, and then it was stated that they could make appointments with the doctor to be examined. It was entirely voluntary. Seventy-seven per cent of our employees at that time were examined. We stopped with that at that time, but two years later we started it again, and we had two doctors at the time. We found that one doctor was much more strict than the other, and we found that our people liked that and wanted to go to him, and that he took time to examine them and give them advice. We had the astounding experience of having all of our employees submit themselves to examination without objection, barring only five. Those five people we did talk to, and I was always one of the first. We did talk to this five, and they were examined.

The figures I want to give you are these, and they are very, very gratifying to me. When we first examined our employees we found 51 people in our employment who were seriously affected as to health, that is, their condition was serious.

Mr. London. Out of a total of what?

Mr. Noyes. 900 or 1,000. What we call our risks. Fortunately, we knew somewhere where a man was afflicted with a severe hernia, we shifted his work. We have had these people under examination. We suggested that they go down occasionally to see the nurse and the doctor, and visits to our nurse and doctor are very, very frequent, and if I would go into details I think I would really astonish you. They can go at any time to see them and ask them for advice.

It was more than 51 when we started, and we had those 51 examined during the month of January, and we were able, checking up against the records, three, four, five, and six years prior, to state that we had shown an improvement in the health of every one of the 51 except one. There was a marked improvement in these men who were the most seriously affected. That is a matter of record. You can see their health examinations. The doctors can go over their records and compare them.

We have less lost time than we ever have had in the business, and we have other evidence to give you. I am only giving you part of it.

We became interested in the science of management 15 years ago, and I have some figures to give you as to the increased rates of pay in our plant as against 15 years ago. Our rates of pay for girls have increased from 135 to 140 per cent. For the men in our employ, their wages have increased from 80 to 90 per cent. These are only some general figures. I do feel this, that if you good people have the chance to visit these plants—I know of course that it is complicated. I can see that when you discuss the details of it you can criticize any system without question. The thing that stands out in my mind is that it is such a big advance over what existed formerly in industry. I think also that it is very much more humane than it has been.

We try to establish normal rates for the department that are relatively just; one as against the other. We have made for years a study of that. We took into account the prevailing wages in the community. We took into account the wages paid in our industry, wherever it was located, and any branches of it. We won t pay less than our competitors pay as a basis for normal wages. We tried then to take into account the time of learning, the risk that is involved, what is going to happen in old age. Does it lead to opportunities and the like? We tried, where a man said that his job was a hazarduous one, we thought he ought to earn more, and we took into account all of these factors, and after we have our scales made up, we have the plus and minuses for the different things.

But the fact stands out that our people do earn more than the operators in any other button industry, and relatively more than the community.

I can say one other fact, and that is that I think our people prefer to come with us. It is a reputation that we have established, and it is a reputation which we have the good fortune to share only with one other concern in Rochester. I think people prefer to come to us as against others.

The question came up as to Prof. Hoxie's opinion in this matter, and I happened to have an interview with Prof. Hoxie, or at least I was present at an address he have in Rochester some six weeks ago. He delivered an address there and set forth the objections to and the reasons for scientific management. He tried to be just and impersonal and set forth the claims and arguments pro and con. After he delivered his address someone asked him what he thought about it all; what was going to happen, what should we try to do. He asked if they wanted his personal opinion in the matter, and he said: "Personally, I can not conceive that the American public will give up scientific management. The American public is interested in anything that promises increased efficiency." He expressed it as if there was not a doubt about it as to its revival ultimately.

I think if you people really were in touch with it and visited this plant, I think you would feel that impression also. You can spend hours and days criticizing this thing or another thing or any other system. I have simply tried to present it to you in a general way.

I do not think I have any more to say.

Mr. SUMNERS. I just wanted to suggest. As I understand this bill and the witness's statement; the witness's statement, as I understand it, does not deal with the objectionable features of the bill. As I understand this bill, it would not disturb any of the things which you spoke about. This bill deals with a system of fixing time by the stop watch, and does not disturb your doing any of the things which you have discussed as having been done justly.

Mr. NOYES. This bill would seriously affect it, because it puts an end to stop-watch work in connection with government—that is fundamental.

Mr. SUMNERS. That is the point that I myself, as a member of the committee, would like you to address yourself on.

Mr. NOYES. It is fundamental to development under scientific management. You can not get the data and the facts without it.

Mr. SUMNERS. Who could not you have a doctor and a nurse and shift the man who has got hernia to some other job and all that sort of thing without the stop-watch proposition? You will pardon me. I do not mean to interrupt you or confuse, but I earnestly want to find out.

Mr. NOYES. The doctor and the nurse came in only a few years ago, but we started work on the scientific management 15 years ago. That is only a by-product, so to speak.

Mr. SUMNERS. But my point is, Why can't you deal with the human animal—what has the stop watch got to do with dealing with the human animal and getting doctors and nurses and all that sort of thing? The stop watch is what we have been complaining about, and I do not think you have touched upon it.

Mr. NOYES. The bulk of achievements under scientific management are based on time study in a broad sense.

Mr. SUMNERS. That is what we want to know about.

Mr. NOYES. That is the fundamental basis of it, time study in a broad sense. If you take away your stop-watch and your time-measuring systems, you are doing away with the basis on which things are accomplished.

Mr. SUMNERS. Why?

Mr. NOYES. Because we can not get at the facts scientifically. We can not get the data without it.

Mr. SMITH. Do you have to have the stop watch to increase the wages?

Mr. NOYES. No, sir; but we could not afford to unless we could get results that would justify us in doing it; unless we could get increases sufficient to make that profitable.

Mr. SMITH. You have increased wages 140 per cent in 15 years.

Mr. NOYES. That is the raise of wages for the girls.

Mr. SMITH. The carpenters got an increase in wages in Chicago last fall, and the carpenters struck because they were only getting 40 cents an hour, and their wages must have been increased a great deal more than that.

Mr. NOYES. I do not conceive that we could have existed under the hard competition which we have unless we had been able to effect economies through scientific management. It is not even a conceivable possibility.

Mr. SMITH. There are so many of these instances that you have related that do not depend on the stop watches.

Mr. NOYES. How could I afford to advance wages indefinitely in the competitive field? We make largely vegetable ivory buttons. The total production of ivory vegetable buttons is less than $5,000,000, and there are 23 factories making them and 20 of them have a capital of $20,000 and upwards, and the hardest competition which we had previous to the war was with German and Austrian factories. There are 23 concerns fighting for it. We can not do those things unless we can get economies through science and management.

Mr. SMITH. I want to compliment you on the interest you take in your workmen.

Mr. NOYES. We could not have done it without the time-measuring system. You get my point, Mr. Sumners?

Mr. SUMNERS. Yes, sir; I get your point.

Mr. SMITH. You have a plant run by steam, and you have an engineer and you have bookkeepers. Do you use your stop watch on them?

Mr. NOYES. I think in the end we would; yes, sir.

Mr. SMITH. Do you use it on your teamsters?

Mr. NOYES. I think we ought to use them everywhere.

Mr. SMITH. Does it apply to agriculture?

Mr. NOYES. I will hold up my hands. I am just talking about ourselves, trying to tell our little story as best I can.

Mr. SMITH. How about the total number of employees now and 15 years ago?

Mr. NOYES. About the same; about 1,000. There is not much difference.

Mr. LONDON. I understood you to say that the adoption of the stop watch does not necessarily involve speeding up.

Mr. NOYES. What I meant to say was this, that the results accomplished through scientific management are not to any degree at all due to speeding up. That is what I want to make clear. It is not even thought of in that connection.

Mr. LONDON. And the only object of the stop watch——

Mr. NOYES (interposing). Is to get the data.

Mr. LONDON. And the number of operations necessary for the performance of a particular piece of work?

Mr. NOYES. And all the factors pertaining thereto, condition of materials and condition of machines.

Mr. LONDON. Is the work subdivided into various branches and sections?

Mr. NOYES. In our business?

Mr. LONDON. Yes.

Mr. NOYES. Yes, sir.

Mr. LONDON. How many processes are necessary to turn out a button?

Mr. NOYES. It depends on the kind of button you make. To take the most complicated one I know of—we handle a raw material that goes into a green state, and we have to dry it, and it takes about 14 months on an average and involves 65 or 70 operations.

Mr. LONDON. Are your 1,000 employees divided into 65 groups, or approximately that number?

Mr. NOYES. A good many individuals do more than one operation.

Mr. LONDON. But most of them?

Mr. NOYES. We are trying to train our people to do more than one and broaden them out and give them better opportunities.

Mr. LONDON. But, as a rule it is confined to one operation in most factories?

Mr. NOYES. Yes, to a certain extent, in general. It was true before we started scientific management, and it is true to-day.

Mr. LONDON. Would it be unfair to ask you what the present wages of the women workers are?

Mr. NOYES. I can not give you the actual figures, because I do not know them at this moment. I have only the figure of increased percentage.

Mr. LONDON. If the original wage was very small——

Mr. NOYES. They were the prevailing wages under the conditions in the industry at the time.

Mr. LONDON. And it is a competitive industry?

Mr. NOYES. Extremely so.

Mr. LONDON. So that, in determining wages, you have to be guided by the law of competition?

Mr. NOYES. I can show you how extremely so that is. When we appeared before the Ways and Means Committee. Price, Waterhouse & Co. examined the books in 15 of the 23 companies, and certified that the average earnings of the 15 companies had been less over a period of three years—had been less than 4 per cent.

Mr. LONDON. Exclusive of the compensation allowed to them as salaries, I suppose.

Mr. NOYES. Including that—no; I suppose that was the profits of the industry. But the salaries are very low. They are all low, including my own.

Mr. NOLAN. What were the hours of work in your establishment before you had scientific management?

Mr. NOYES. Fifty-nine or sixty hours.

Mr. NOLAN. What are they to-day?

Mr. NOYES. Actual working hours 51⅓.

Mr. NOLAN. How is it divided in the week?

Mr. NOYES. I can not tell you just now. We have changed several times. We stop at noon in the factory.

Mr. NOLAN. Were you present in your establishment when Mr. Hoxie and Mr. Valentine and Mr. Frye visited it?

Mr. NOYES. I was there when Mr. Hoxie visited it.

Mr. NOLAN. Did Mr. Valentine and Mr. Frye visit it?

Mr. NOYES. Mr. Valentine did, but Mr. Frye did not.

Mr. NOLAN. How long was he employed in looking at your establishment?

Mr. NOYES. Mr. Hoxie was with us two and one-half days, as I recollect it.

Mr. NOLAN. Do you think that he had a fair opportunity to observe the efficiency system in your establishment in that time?

Mr. NOYES. I think Mr. Hoxie a very shrewd observer in many ways. It is awfully hard to tell what a man observes when he goes through an establishment.

Mr. NOLAN. Was he accompanied by any members of the firm or any of the officials?

Mr. NOYES. He was with me part of the time and three or four of our people a part of the time, and he went by himself at one time and interviewed numbers of the people when I was not with him, or anyone else connected with the firm. He asked that privilege particularly.

Mr. NOLAN. He had a pretty good opportunity to investigate?

Mr. NOYES. Perfectly, sir.

Mr. NOLAN. You think he made a fair examination of your establishment so far as the scientific management is concerned?

Mr. NOYES. It is a question of how much a man gets from such an examination. I can not tell you. I do not know what he got.

Mr. NOLAN. He asked for the cooperation of the concern?

Mr. NOYES. He asked us to help him and give him facts, and we tried to do what we could.

Mr. NOLAN. And you gave it to him?

Mr. NOYES. To the limit of our ability.

Mr. NOLAN. So when he went into your establishment he did not ignore the officials of the establishment, but took into consideration the concern itself and asked their cooperation, and went into it as extensively as he could during the time he was employed?

Mr. NOYES. I should say so. He asked the privilege of going into the departments alone and interviewing the employees, and he did that and interviewed foremen and others in there.

Mr. NOLAN. You have referred to a question I put to Mr. Thompson a while ago regarding the stove manufacturers. You do not know anything about the stove manufacturers, do you?

Mr. NOYES. Only on your say so.

Mr. NOLAN. You do not know that they have absolutely revolutionized the stove business in the stove foundries in recent years?

Mr. NOYES. Absolutely nothing. I know absolutely nothing about it.

Mr. NOLAN. So that you do not know that the introduction of labor-saving machinery and new methods of molding are just as complicated and have to have the same degree of ingenuity applied to the setting of prices on the new stoves as they would on the old?

Mr. NOYES. I know nothing about it. I just simply took your say so on it. You said it had lasted for 26 years, and that is all that I knew.

Mr. NOLAN. I said that the system of setting prices had lasted 26 years. but not that the business had stood still for 26 years. They have a very efficient organization and good, skillful line of men employed to get the best up-to-date knowledge and have the cooperation of their men. I just wanted to let you know that there was such a condition.

Mr. NOYES. I should not have said what I did without more knowledge.

Mr. NOLAN. Are you employing time-study men continually in your plant?

Mr. NOYES. Yes, sir.

Mr. NOLAN. All of the time?

Mr. NOYES. Yes, sir.

Mr. NOLAN. And have them there year in and year out?

Mr. NOYES. Yes, sir.

Mr. NOLAN. What percentage of the employees in your establishment are women?

Mr. NOYES. About 55 or 60 per cent.

Mr. NOLAN. Could you give us an idea of what the average earnings of the women are per week there now?

Mr. NOYES. I would not want to speak offhand. I can certainly give you the data. I have not it clearly enough in mind at this time, but I can do so later on.

Mr. NOLAN. Would it be $8, $9, or $10 per week?

Mr. NOYES. I would not want to quote the figures unless I quoted them correctly.

Mr. EMERY. I know it is asking a great deal of indulgence to hear another witness at this late hour, but Mr. Dunlap is under almost the necessity of leaving here, and he will be very brief. He is the editor of the Engineering Magazine, perhaps the best known publication of its class in the United States and perhaps in the world.

STATEMENT OF MR. JOHN DUNLAP, EDITOR OF THE ENGINEERING MAGAZINE.

Mr. DUNLAP. This is so essentially a human question, and it is so perfectly evident that every member of this committee is here with the determination that the committee means to stand by the interests of the working people, as you should that I think perhaps my personal experience may tend to indicate the meaning of what I say under oath.

I have been a newspaper man all of my life, and as a young newspaper reporter I was so absolutely outraged—by the way, out in Pittsburgh—on the Baltimore & Ohio Railroad in the car strike of 1877 that I became a firm believer in labor unions. I have been that from that day to this, and as proof of that in 1883 I joined the Knights of Labor. I met Mr. Powderly down in Seecretary Wilson's office about three weeks ago, and he reminded me of that, and he told me that the number of my lodge was 1648.

Now, I not only believe in labor unions and believe in the organization of the working people, because I know if they did not do it they would be enslaved. I know that labor unions and the organizations of labor are not in the least inconsistent with scientific management, as it is popularly called, and in that regard I want to say to you gentlemen that I have here a brief published by Mr. Louis D. Brandeis, who has been appointed to the Supreme Court, who distinguished himself as the voluntary attorney to the arbitrator for labor unions, and in this brief he gives the most unqualified testimony to the effect that there is no inconsistency between the proper organization of labor and the introduction of these scientific methods of management.

Now, because I am interested in the labor question, and because of my studies all of my life of economic questions, when I started the Engineering Magazine just 25 years ago the 1st of April, I made up my mind that these questions of differences between labor and capital were the fundamental questions in this country, and that that should be a central feature in the editorial conduct of the paper.

To illustrate that, in the first paper published in 1891, I had a paper by Edward Atkinson on the mechanical display at the World's Fair of 1893, and I engaged that paper from Mr. Atkinson and had him write it because I wanted him to point out that the true secret of cheap production was machinery; that the difference between the civilization in which we live to-day and the civilization of the Greeks and the Romans consisted simply in the utilization of mechanical power, and that what manufacturers and workingmen and everybody else needed to wake up and see was that the secret of all cheap production was in the use of machinery, the utilization of mechanical power.

On through 1891, 1892, and 1893 I had all kinds of economic articles on labor strikes, particularly in the coal mines, and in 1896 the subject took definite form in my mind. I published a series of papers called "Modern Machine Shop Economics." The first paper was the location of the shops: Shall it be in the city or the country—in the city where you have at hand hundreds of laborers to call on, or in the country where you can control your own environment—the design of the shop, the mechanical equipment of the shops, modern machine tools as an economic proposition, and the relation of employer and employee.

Those papers I announced in a little prospectus which I distributed very widely among manufacturers, and that brought me so many subscribers and aroused such interest throughout the whole country that I saw that I had struck a rich lead, and from that time to this I have been publishing the literature of what is now called scientific management.

The man who wrote that original series of papers for me was a man named Horace L. Arnold, who had spent 40 years in machine shops, and he was a poet, a man of wonderful gifts as a writer.

He began by coming into my office one day and he said, "Dunlap, I have just seen the most remarkable thing that ever happened to me in all my 40 years' experience. I have been over to the Baldwin Locomotive Works and spent three days with the superintendent there, and do you know that that fellow is absolutely destroying machinery?" He said, "I have been taught all my life that the thing for a mechanic to do, when they bought a very expensive piece of machinery, was to nurse it and take care of it," and I said, "That is absolutely true, because I was over in the Portsmouth shop yards in England last year and I saw block-making machinery that had been in there for 109 years, and they were still using that old machinery and I joked with them about being able to make twice as many blocks out of new machinery, and they laughed at me."

He says, "Over at the Baldwin shops they will buy the very latest piece of machinery they can get to put up, and instead of nursing it they will run it on eight-hour shifts from the time it is put in until it is worn out, and then they will buy something better." I said, "What is the difference between the machine and the product?" He said, "That is what I am here to tell you. That is the most remarkable thing I have ever seen." He said, "That is the reason these people are able to sell locomotives all over the world in competition with the world, because they use the most wonderful methods." I said, "You write a paper on the destructive use of machine tools," and that paper was published in 1894 or 1895.

That is the way the literature of this modern science—and it is a science now—that is the way it started. I am the fellow that published it. I am the man that published the first book that was ever published on the subject of cost keeping, and Arnold wrote it. He traveled all around through these Eastern factories inducing men to give information about how they cut their costs. I had a long series of papers, following this machine-shop series, on cost cutting, and that created a sensation. Arnold said, "We ought to make a book," and I said, "I have never published a book; I do not care about publishing books." He said, "We can make money out of it," and we published the book, and we asked $7.50, and the book has been selling ever since. Arnold made a lot of money out of it, and I did too, and that was the first book published on cost keeping.

As soon as that book sold enough to show that it paid, Arnold came to me and said, "We want a book on The Factory Manager; that wants to be the title, and we want to teach the factory manager what modern science and common sense is in the management of a factory." I said, "Go ahead; the cost keeping is all right." So we published that book, and both of those books are still selling. They are the first books on that science that were published.

We published those two books, and, as I say, they were incidental to the magazine. I never cared anything about publishing books, and my managing editor came to me one day and he said, "These articles that we are publishing are so valuable that we can make books out of all of them, and we ought to do it." I said, "I do not care anything about the book-publishing business." I said, "Brockaway, the business manager, is a good salesman, and can write good circulars, and we will apply some scientific management. I will give you a bonus. You undertake to edit the books after they appear in the magazine, and Brockaway will undertake to sell the books, and I won't be bothered except by putting up the money, and I will give you a bonus," and we agreed on a bonus of 12½ cents on the price of the book, and they divided it, and that is the way the library of industrial management was started, and I am the publisher of it. Those two boys made $1,400 a piece last year out of the book business. That is what we understand in our office to be a bonus.

To get down to practical things, I think I can answer this question about the 8 pairs of shoes and $8 a day, and the ninth pair of shoes, and I have been hungry to get a chance to do it. Eight pairs of shoes per diem is the standard wage, and he gets $8. If he produces 9 pairs, you want him to get $9, don't you?

Mr. SUMNERS. I did not want him to get anything; I want to find out what he does get. I was only trying to get information.

Mr. DUNLAP. Under the piece-rate system, which is the driving system, which is the thing that tempts men to overwork themselves, he would get the $9, but under the bonus system what does he get if he is dealt with fairly? We will agree that the standard rate, the fair day's wage, is $8 for eight pairs of shoes. The concern has adopted modern, up-to-date, scientific methods, and it has employed experts to come in and study how to instruct the producers how to produce more shoes. It has improved its machinery. It has studied methods of how to supply the material to machines. In other words, it has put intelligence into the work and put capital into the work and put consideration into the brains of the operator, and under that system he would get a bonus of one-third or one-half, according to what was fair, according to the common sense and foresight of the employer.

In other words, the bonus would be divided. The increased production would come as a reward to the worker for using his intelligence and his skill and to the employer for introducing intelligent methods. In other words, the division of the bonus is a question to be equitably decided between the workers in the factory and the employer. So it is with Mr. London's living wage.

Mr. NOLAN. What would the operative get for that ninth pair of shoes?

Mr. DUNLAP. He ought to get at least a third. I would rather he would get one-half.

Mr. NOLAN. How much would he get, $8.50?

Mr. DUNLAP. In other words—yes, because he could not afford to invest the money in improved machinery and improved methods and employ helpers to bring materials to the machines, unless he got the reward.

Mr. SUMNERS. That shoe proposition I claim the right with reference to that. Here is the question in my mind. As I understand, the eight pairs of shoes per day production is not the production of a man of average producing capacity under the old system would produce, but the eight pairs of shoes production is the production of the average man under the new system, and I recognize that the man who employs other men to establish scientific methods is entitled to some and a proper return upon his enterprise and expenditure of money. Having put in better machinery, he is entitled to something. Now, then, he has gotten his reward in the eight pairs of shoes production, which is the production of the average man after scientific methods have been installed. That is, so far as the general reorganization of the shop, aside from the speeding up of the employee, is concerned.

Now, then, under the stop watch, if the employee speeds up under the stimulus of the stop watch, aside now from any additional producing power caused by improved general arrangements in the office, why should not he get a dollar for his speeding up?

Mr. DUNLAP. In other words, the intelligent employer wants to pay out all the money and employ the experts to teach him how to do it and provide him with improved machinery and somebody to put the materials in his way; and then induce him to overwork himself and pay him a dollar for doing it? You want to go back to the old piece-rate system.

Mr. SUMNERS. Wait a minute. Then, if it is not good for him to speed up, why not penalize him for that?

Mr. DUNLAP. We have had a good deal of technical information here from Mr. Towne and Mr. Thompson, and I do not pretend to be a technical man.

Mr. SUMNERS. I withdraw that inquiry.

Mr. DUNLAP. I do not intend to enter into any debate about the technical details of this thing. What I do mean to say right here to you gentlemen in the interests of labor and in the interests of this labor committee and in the interests of American industry is just this: That these systems represent nothing on earth but common sense and fair dealing and they have been introduced in thousands of the foremost industrial establishments in the United States. I know personally, from having had an office in London for 12 years, that they have been extensively introduced, so far as possible, throughout London where the labor unions would let them. I know that they have been introduced in the gun factories of Germany. I had an office in Berlin for two years and I know that they were buying American machinery and employing American engineers to teach them how to introduce these systems. I know that Japan is writing to my office and ordering all of my publications. I know that this country has got to go up against the competition of England and Germany and Japan as her chief competitors.

Mr. NOLAN. Getting back to the question of common sense and fair dealing. How do you reconcile this method of payment on the shoe question with common sense and fair dealing, when a scientific engineer and an efficiency engineer comes into an establishment and sets eight pairs of shoes as a fair day's work for $8, and then on the part of the operative he produces the ninth, that he should not get the same amount per pair for the ninth that he got for the eighth? If the employer was willing to pay him $1 for the first eight, why should he take 66⅔ per cent or 50 per cent of that dollar off?

Mr. DUNLAP. Now, we are right up against the problem. I want to get that into your mind just as clearly as it is in my own. This extra pair of shoes is produced as the result of scientific management, of the study of the methods of production, of the improvement of machinery, of employing instructors to teach the men how to do their work. What possible inducement would there be to the employer to give all of this away?

Mr. NOLAN. He is satisfied to pay $1 per pair for eight pairs of shoes.

Mr. DUNLAP. He is not satisfied if he is an intelligent manufacturer?

Mr. NOLAN. What I want to get is a statement from you as to how you can apply the question of common sense and fairness to a proposition of that kind where the manufacturer sets the task through this efficiency system as eight pairs of shoes for $8 and gets all of the benefit of that, and is willing to pay $1 per pair for the eight pairs of shoes—why he should take 50 or 66⅔ per cent of that price from the man if he makes the ninth pair of shoes?

Mr. DUNLAP. The difference between you and me is that you are taking Mr. Thompson's bonus as the foundation.

Mr. NOLAN. I am taking your own statement.

Mr. DUNLAP. I am speaking of a fair day's wage.

Mr. NOLAN. Which is $8?

Mr. DUNLAP. Yes, sir; which is $8, and the standard output is eight pairs of shoes.

Mr. NOLAN. The standard output is eight pairs of shoes?

Mr. DUNLAP. Yes; at the day-wage base. If, through scientific management and scientific instruction and improved machinery and putting the helpers in there, there is an increase of a pair, the employer has to be rewarded, has he not?

Mr. NOLAN. He feels satisfied with eight pairs of shoes a day for $8.

Mr. DUNLAP. He is not satisfied, and he ought not to be satisfied.

Mr. NOLAN. But if he is not satisfied, and the scientific management people tell us——

Mr. DUNLAP (interposing). That is under Mr. Thompson's system, and it constitutes a bonus.

Mr. NOLAN. There is no system under scientific management experts.

Mr. SUMNERS. Under the old system, before you established scientific methods, you were paying the shoemaker $8 to make seven pairs of shoes. I am giving you a hypothetical case. Scientific methods are installed, and the average shoemaker makes for $8 eight pairs of shoes. That is clear, is it not?

Mr. DUNLAP. Yes, sir.

Mr. SUMNERS. Now, then, the man who has installed scientific methods has been rewarded by one additional pair of shoes as his compensation for installing scientific methods. He made seven under the old system and paid $8 for it. Now, under the scientific management, the average man makes eight pairs of shoes and gets $8. Now, he speeds up and makes the ninth pair of shoes. That ought to be clear. Why should not he get a dollar for that?

Mr. DUNLAP. Wait a minute. According to my system of reasoning, an intelligent manufacturer would not want him to speed, and according to my understanding of the bonus, the standard day wage would be the basis that would be fixed, and finally, the additional increased production would come as the result of cooperation between the employer and the employee.

Mr. SUMNERS. Now, the employer got his dividend out of the cooperation in the one pair of shoes which raised the production from seven to eight.

Mr. DUNLAP. But you are always getting in Mr. Thompson's bonus plan, but you can not fool me into taking his proposition and making it fit my own. I am talking about the standard wage and the bonus on top of it.

Mr. SUMNERS. I was struck by what that man said to you when he went over there to the Baldwin Locomotive Works and told you that they were working this machinery to the highest producing capacity, and when they got through with it they were putting it into scrap, and I was wondering whether or not there is not running through the minds of some managers of factories less humane than the gentleman here from Rochester, the same notion with reference to the human machine.

Mr. DUNLAP. Delighted to have you bring that up.

Mr. SUMNERS. I come from an agricultural section, and I know very little of what you are talking about.

Mr. DUNLAP. I think I can explain that, and I think I can also explain to the members of this committee the exact basis of all the feeling against this science, and that was Fred Taylor's demonstration in pig iron. I think, and I have always thought, from the time that Fred Taylor gave that demonstration of what it was possible to do with a body of pig-iron men in pure physical labor with a stop watch, was what scared working men to death. What Fred Taylor did there was to cut out the fellows that were ruptured; to cut out the fellows that were sick and weakly. He picked a bunch of fellows who were athletes, and he trained them just like you were training a baseball team or a football team, and he had just exactly what he boasted. He had the finest picked body of men that ever handled pig iron, and he made an enormous increase in the amount of pig iron that was handled, and he did not give the men anything like the additional wage that he should have given them. But Taylor was an idealist. Taylor was one of the hardest men to get along with.

Mr. KEATING. Are you not a little severe on idealists?

Mr. Dunlap. Wait a minute. Taylor wanted to demonstrate to the last minute any idea that he ever had in his mind. He wanted to prove that he could greatly increase a man's working capacity, but he took the method of training a gang of experts. What he did was just exactly like a set of men picking a football team. He made them win, but in winning he gave a wholly false impression of what scientific management is.

What you gentlemen need to understand is that in all industry, throughout all its ramifications and branches, the time has gone by when physical labor, and the chance to speed up and exhaust yourself physically, is a large consideration. In other words, the mind and the skill are the things that count in modern industry, and the thing that this scientific management does, as you will get abundant testimony in that brief of Louis Brandeis—what it does is to instruct people to advance ordinary workmen; in tutoring workmen to become instructors of other workmen and gradually rise to positions of superintendents. Hundreds of cases can be cited of uneducated men that have risen to the ranks of superintendents through this system. In other words, the whole theory and purpose of this modern science is to educate people how to do work; to find out the simplest methods by which we are to do work.

Mr. Nolan. You tell us, and you cite particular instances, of where you have been a pioneer, particularly in scientific shop-management efficiency.

Mr. Dunlap. Not that; in the publication.

Mr. Nolan. In disseminating knowledge which would give the employers, we will say, in the machine-shop industry of this country, the engineering end of mechanical trades, an opportunity of studying costs and applying common-sense methods in the instruction of their establishment, installing machinery, etc.

Mr. Dunlap. Yes.

Mr. Nolan. Is not this where the whole trouble comes: The difference between applying common-sense methods of efficiency and the methods that have been applied by Mr. Taylor through the stop-watch and time-movement system?

Mr. Dunlap. I do not agree with you. Mr. Taylor was the chief creator of this science—that is to say, he did more to demonstrate its possibilities than any other man that ever lived; but, as I say, he was an idealist, and he carried many things to extremes.

Mr. Nolan. That is just the point I wanted to bring out.

Mr. Keating. Is it possible under this system of yours to carry things to extremes?

Mr. Dunlap. It is not possible unless it is in the hands of a brute.

Mr. Keating. But it is possible in the hands of an employer or a superintendent who has not this consideration for the welfare of his men to apply this thumbscrew—this speeding-up process—until you exhaust the human machine, as these men in the Baldwin Locomotive Works exhausted their machinery, and after you exhaust the human machine to throw it into the junk heap?

Mr. Dunlap. There is not any engineer alive to-day that has any standing in any society that would be guilty of recommending such a thing. No employer can induce any reputable engineer to recommend any such thing.

Mr. KEATING. How about Mr. Taylor? He says this system at Bethlehem was such that only one out of five——

Mr. DUNLAP (interposing). I had two boys educated at Yale.

Mr. KEATING. Just a moment.

Mr. DUNLAP. Get down to brass tacks. That is right.

Mr. KEATING. He is the founder of your science. Let us see what he did. I quote from Mr. Taylor's book:

> When the writer left the steel works, the Bethlehem pieceworkers were the finest body of picked laborers that he had ever seen together. They were practically all first-class men, because in each case the task which they were called upon to perform was such that only a first-class man could do it. The tasks were all purposely made so severe that not more than one out of five laborers (perhaps even a smaller percentage than this) could keep up.

Mr. DUNLAP. That is exactly what I told you. That is the most unfortunate thing that Fred Taylor ever did.

Mr. KEATING. It is the truth, is it not?

Mr. DUNLAP. It is the truth in that case, but you gentlemen, as Members of Congress and members of this Committee on Labor, you want to recollect that that thing does not apply to but an infinitesimal portion of the work that men do who earn wages.

Mr. SUMNERS. Is it not possible that even these men are so selfish that they can not afford to admit it?

Mr. DUNLAP. I do not understand the question.

Mr. SUMNERS. Even if people had no consideration for their employees, when they have men who are trained they can not afford to wreck them so as to have to go out and get other men and train them?

Mr. DUNLAP. My dear sir, that is one of the fundamentals of this science. It makes the employer take an interest in his employees. It opens his eyes, that he has to look after his employees as he has always looked after his machines. In other words, it is an enlightened science. It has been introduced all over this country.

Mr. SUMNERS. But as your machinery becomes more complex the time of training becomes longer, and when you get a man well trained——

Mr. DUNLAP (interposing). You can not afford to sacrifice him.

Mr. KEATING. Let us see if you are still following in your master's footsteps in what you have said.

Mr. DUNLAP. Do not say my master. I have got none.

Mr. KEATING. The man who has founded your science, Mr. Taylor. Here is from paragraph 166, page 1374, of this treatise of Mr. Taylor:

> Where the labor market is large enough to secure in a reasonable time enough strictly first-class men, the piecework rates should be fixed on such a basis that only a first-class man working at his best can earn the average amount called for. This figure should be, in the case of first-class men, as stated above, from 30 per cent to 100 per cent beyond the wages usually paid. The task idea is emphasized with this style of piecework by two things, the high wages and the laying off, after a reasonable trial, of incompetent men; and for the success of the system the number of men employed on practically the same class of work should be large enough for the workmen quite often to have the object lesson of seeing men laid off for failing to earn their wages and others substituted in their places.

That is not speeding up, in your judgment?

Mr. DUNLAP. That was, but in addition to that, it was the selection of men to do a particular job and he recognized the survival of the fittest, and that was the only thing he could consider.

Mr. KEATING. And is that the basis of your system?

Mr. Dunlap. No, sir.

Mr. Keating. Then, you have departed from the teachings of your founder?

Mr. Dunlap. Absolutely.

Mr. Keating. You have repudiated Mr. Taylor, but retained his name?

Mr. Dunlap. I am not here to defend the Taylor system.

Mr. Keating. But you are here and advocate the repudiation of the Taylor system.

Mr. Dunlap. No; I am not.

Mr. Keating. That is the policy of the man who founded your system.

Mr. Dunlap. He did not do any such thing. I said he was one of the chiefs.

Mr. Emery. I suppose that those who pursue the building of steamships to-day do not follow Robert Fulton. The man who built the *Mauretania* did not follow out the example laid down by Robert Fulton. There is not a more dangerous form of argument known than quoting from a large volume.

Mr. Keating. I appreciate that, but the witness has himself rather invited this form of discussion, and I have quoted accurately from Mr. Taylor's books. The witness does not question these quotations, and I think I have stated his position accurately when I say that he has repudiated the teachings of the so-called founder of the system.

Mr. Dunlap. I deny it.

Mr. Keating. Proceed, Mr. Dunlap. I have no further questions to ask you.

Mr. Dunlap. All that I wanted to say in addition, Mr. Chairman, is that I have always regarded that experiment and that example and that statement by Mr. Taylor as about the most unfortunate thing that ever happened to the science. That has been established largely since, because it has been taken as the one demonstration of what the science means, when, as a matter of fact, it gives no indication whatever of the breadth and reach and importance and beneficence of the science.

Now, finally, I want to say in reply to the point that Mr. London raised—Mr. London seemed to feel and tried to get Mr. Thompson to indicate that under scientific management every employer would take advantage of a man's necessities and get him to work for any kind of a wage, regardless of whether it was a living wage. I want to say that no intelligent employer under this intelligent system would ever think of doing any such thing.

Now, in conclusion, I want to say that there is a leading editorial that I have written for my magazine to appear next week, and inasmuch as it embodies a very careful statement of my personal views upon the subject, I should like to have it incorporated as a part of my testimony.

Mr. Keating. Without objection, it will be put in as a part of his remarks.

(The editorial referred to is as follows:)

[The Engineering Magazine, April, 1916.]

DANGEROUS LABOR LEGISLATION NOW BEFORE CONGRESS—A CALL FOR PROMPT ACTION.

(By the editor.)

After full 25 years of work in publishing in these pages the standard literature of what is now recognized the world over as the science of industrial management, it is rather amazing to find introduced in the American Congress a bill prohibiting the most enlightened wage systems ever yet devised by man.

The stupidity of this proposed legislation can best be indicated by giving the text of the bill itself, as follows:

"IN THE HOUSE OF REPRESENTATIVES.

"January 11, 1916.

"Mr. Tavenner introduced the following bill; which was referred to the Committee on Labor and ordered to be printed:

"A Bill To regulate the method of directing the work of Government employees.

"*Be it enacted, by the Senate and House of Representatives of the United States of America in Congress assembled,* That it shall be unlawful for any officer, manager, superintendent, foreman, or other person having charge of the work of any employee of the United States Government to make or cause to be made with a stop watch or other time-measuring device a time study of any job of any such employee between the starting and completion thereof, or of the movements of any such employee while engaged upon such work. No premiums or bonus or cash reward shall be paid to any employee in addition to his regular wages, except for suggestions resulting in improvement or economy in the operation of any Government plant.

"SEC. 2. That any violation of the provisions of this act shall be deemed a misdemeanor and shall be punished by a fine of not more than $500 or by imprisonment of not more than six months, at the discretion of the court."

A similar bill, introduced by Congressman Van Dyke on the same date, January 11, 1916, would prohibit all time studies throughout our entire Postal Service—in which the element of time is of obvious and fundamental importance.

Both these measures have been introduced at the behest of the leaders of the labor unions throughout the United States, and it should be at once recalled that precisely similar legislation was adroitly incorporated as "a rider" in an Army appropriation bill by the last Congress. No public hearing was ever given upon the proposals, and the vast majority of Congressmen and Senators were so wholly uninformed upon the subject that the rider was passed by the House practically without debate. It was later thrown out by the Senate, yet in conference, the labor leaders were able to dominate the conference committee of the two Houses, and thus the measure became a law so far as the appropriations in that particular bill were concerned. We are further informed that the ringleader in the conspiracy to pass this damaging legislation without public hearing or intelligent debate was Congressman Buchanan of Illinois, who is now under indictment by a United States grand jury.

Precisely the same tactics will be attempted in this session of Congress, as evidenced by the fact that no hearings on the Tavenner bill have yet been granted by the Labor Committee of the House, and the appropriation bills for both the Army and the Navy are now certain to come up before such hearings could be held. In other words, the transparent scheme of the labor leaders and the labor Congressmen is to pass the measure by trickery and stealth, without opportunity for investigation of debate, and not alone to make the prohibition apply to all the arsenals and navy yards of the Government, but also to the private industrial plants of all contractors for machinery, equipment, and supplies for both the Army and the Navy.

The necessity for exposing and blocking this legislation is so manifest that a committee of 10, representing leading engineering societies, the National Association of Manufacturers, the National Metal Trades Association, and many local chambers of commerce, has been appointed to take active steps in opposition, and Mr. Henry R. Towne, past president of the American Society of Mechanical Engineers, has accepted the chairmanship of this committee. Voluntary contributions are being solicited, and within its limited means and the short time available for effective work, this committee will be able to do much in the way of supplying Senators and Congressmen with information exposing the fallacies of this reactionary and dangerous proposal.

But all such committee work is necessarily impersonal, and Members of Congress are so constantly pelted with circular letters and printed matter of all kinds that they find it necessary to confine their reading to that which they know to be of special interest to their more intelligent constituents. Unfortunately, very few Congressmen have any knowledge of the new science of industrial management—originated by Americans, developed by Americans, now in successful operation in thousands of American industrial plants, and being rapidly introduced in Germany, England, and Japan—who are certain to be our most formidable competitors so soon as the war in Europe is over.

Congressmen have read about "scientific management" in the newspapers, and they have heard about a few "efficiency and economy" commissions in governmental affairs, but technically and practically they know little or nothing about the new science. They do not understand, therefore, that the premium and the bonus to wageworkers represent the most advanced steps that have yet been taken, and achieved in solving the knotty problem of how to secure free, frank, and intelligent cooperatoin between worker and employer in increasing output—not through "speeding up" or overwork, but solely through intelligent study and instruction in better methods of doing work. In thousands of cases where they have been intelligently applied the premium and bonus systems have proved themselves a boon and a blessing to both workingmen and working women, because they have given an actual increase of wages to all grades of workers, and to those of brains, ambition, skill, and inventive genius they have opened numberless opportunities for advancement and promotion to high positions, which would have been impossible without intelligent instruction of workers of natural ability. All of this can be made perfectly clear to every man of common sense, but we have no time for any such educational campaign now.

The point to realize is that we are face to face with a serious and threatening situation. The labor leaders and the labor politicians are deliberately planning to "put over" this legislation by trickery and stealth, because they reason that it will strengthen the labor unions and make more labor votes. The domination of the labor unions in Great Britain, especially in the engineering trades, is both historic and notorious. They bitterly opposed the introduction of the power loom, the sewing machine, the locomotive, the air brake, the mower and reaper, the type-setting machine, and in fact every great labor-saving device that has ever been invented, upon the stupid theory that "it would throw men out of work." This proposed American legislation is of a piece with all such ignorant reasoning, and the definite plan of our labor leaders is to take advantage of this presidential year and force such legislation through Congress without hearing or debate. If they succeed, the time may come very soon when, like England, our most vital national interests may be imperiled.

Less than a year ago the entire civilized world was shocked by exposure of the fact that through the arbitrary, dogged, and uncompromising regulations of the British labor unions, the armies in the field were actually short of munitions, while the British, the French, and the Italian Navies were seriously threatened with a shortage of coal. This involved a sudden and alarming change in the British Cabinet, and David Lloyd George resigned the high office of chancellor of the exechequer to take the newly created and vitally important office of minister of munitions. It was only because he was the trusted leader of the radical and labor vote, an orator of great power, and a patriot of dauntless bravery that Britain was able to bring about a temporary suspension of the labor-union regulations until the war is over.

With us, the situation now calls for immediate action, and the one and only effective means available is through direct personal appeal to individual Senators and Congressmen. We therefore call upon every reader of these pages to at once telegraph or write personally in protest to both your Senators and certainly to the Congressman representing your district. Let your telegrams and letters be brief, pointed, and just as earnest as you can word them. Address them personally, sign them personally, and insist that Congress shall at least grant public hearings on the measures before they can be put upon the statute books.

We are positively assured, by those familiar with the present situation in Congress, that this is the only possible means of now getting the attention of members of the Senate and House, because they are driven with the work of passing the bills for enlarging the Army and the Navy, and in addition, the great mass of routine legislation is already weeks behind the usual schedule time.

Bear in mind also that both Senators and Congressmen will be very slow to take any action that may seem to place them in opposition to organized labor. They each and all desire to hold the labor vote, and only the bravest among them will stand openly for the right in this vital matter. Fortunately, in this regard we are armed with unequivocal endorsement from an authority on labor union affairs which even labor leaders can not question. Mr. Louis D. Brandeis, who has been nominated for the Supreme Court, is on record in unqualified indorsement and approval of "scientific management." For years past he has been a voluntary attorney and arbitrator for the labor unions, and it will be recalled that he won nation-wide distinction as attorney for the shippers in their protest before the Interstate Commerce Commission against the large increase in freight rates which the railroads insisted upon having four years ago. The brief which he presented before the commission at that time is remarkable for its brevity, its clear reasoning, and its convincing force; and the following extracts from the document are directly pertinent to the present situation:

"Under scientific management, the management of the business assumes toward the workmen a wholly new function. Instead of the prevailing 'putting it up' to the employee to do his work with such stimulus as may be given through force or inducement, the management, under the new science, assumes the responsibility of enabling the employee to work under the best possible conditions of perfect team play. It undertakes to instruct him definitely what to do and the best method of doing the particular work. It undertakes to provide him the best tools, and with machines in the best condition. It undertakes to furnish him with assistance to perform those parts of the operation requiring less skill than his own. It keeps him constantly supplied with appropriate material. Acting in full cooperation with the workmen, the management thus removes all obstancles to the workmen's full performance and supplies all aids necessary to secure full performance. The management thus assumes the burdens of management, and relieves labor of responsibilities not its own." (P. 14.)

"The larger wages are made possible by larger production; but this gain in production is not attained by 'speeding up.' It comes largely from removing the obstacles to production which annoy and exhaust the workman—obstacles for which he is not, or should not be made, responsible." (P. 35.)

"The claim has been made that scientific management and labor unions are inconsistent; that the organization of labor presents insuperable obstacles to the introduction of scientific management in railroads and other indutries where unionism is potent. This claim, we believe, is wholly unfounded in fact. Collective bargaining is alike an important function under scientific management and under the old system." (P. 55.)

If public hearings be granted, any needful number of workers under the bonus and premium plans will appear before the Labor Committee of the House to give personal testimony to their satisfaction with the new system of wage payments. To indicate the character of this testimony, the committee of ten have begun to collect letters from such workers, and these will be laid before Members of Congress as promptly as possible. The following are sample letters which have already come to hand:

[From John Geo. Kreis, Gang Boss, Acme Wire Co., New Haven, Conn.]

"As gang boss for the past five years, I have had a very good opportunity to study the conditions an operator has to work under, both before and after this system had been installed in this factory, and I am glad to say that I have found everyone of my operators to be better satisfied since working under this system.

"My operators also make more money and do not have to work so hard. The result is that they are healthier, better dressed, and more prosperous, and thereby also become better citizens. Hoping this bill does not go through, I remain, etc."

[From Theresa Godino, employee of the Acme Wire Co., New Haven, Conn.]

"I have worked four years at machine work for the Acme Wire Co.

"The last three years under the Taylor Bonus System. I have made more money under better conditions than the first year I worked here.

"I have worked on piecework in another factory, and I am better satisfied with the bonus system here."

[From S. F. Gilla, employee of the Sewell-Clapp Envelope Co., Chicago.]

"With my experience in scientific management I have found a betterment of conditions in S. C. Env. Co. Very efficient in labor and produce. With my part of work at time study on task and bonus have found it very interesting and educating.

"The old method of payment means just one pay envelope on pay day, while the bonus plan makes a willing worker and puts an extra red envelope into his hands with lots to gain and nothing to lose."

[From E. S. Smiley, employee of the Eastern Mafacturinung Co., Beaver, Me.]

"I am pleased to reply to your questions as to how I regard the conditions under the Taylor system and conditions under the old way, and will say: First, I get more money in wages; and second, that there is no lost time. And in many other ways I find the Taylor system much better for the work people."

Thousands of such letters, from operatives in every line of industry and in every part of the United States, can and will be collected should that be necessary.

As to how our leading engineers and inventors and our foremost employers in engineering lines feel upon the subject the following letters give speaking testimony. We are glad indeed to be able to introduce these letters with one from Thomas A. Edison, who began life as a newsboy, then became a telegraph operator, then educated himself in electrical science, and through his numerous and revolutionary inventions has probably given profitable employment to a larger number of men and women than any other man alive to-day.

[From Thomas A. Edison, deen of American inventors.]

"In my opinion, the bill introduced by Congressman Tavenner is based on a fallacy. It is an attempt to prevent efficiency, and would be disastrous to labor and to the public.

"The worst enemy of all the workers is an inefficiently managed shop, and yet the labor leaders can not comprehend the fact—possibly because it is based on mental processes of a primary character.

"There are many ways whereby labor leaders can improve conditions by legislation, but this bill of Congressman Tavenner is not one of them."

[From Dr. Elihu Thomson, past president, American Institute of Electrical Engineers.]

"I agree with you most heartily in the stand you take. I would indeed go so far as to require enlistment to fill places in arsenals and shipyards.

"You are plainly right in pointing out that the move probably contemplates including all contractors working for the Government."

[From E. M. Herr, president, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.]

"This bill is reactionary and bad for both the interests of the Government and its employees. If enacted into law, no Government employee could be paid on any system except the stated day wages, now practically obsolete in all progressive and modern industries. It would close the door absolutely to any possible improvement in the manner of compensating labor, whether skilled or unskilled, no matter how beneficial such a plan might be to the employee.

"The bill does away with all improvements in ways of paying labor thus far devised, and absolutely prevents exact and scientific methods or other possible improvements from being considered. It is against the interests of both Government employees and the Government itself, and will decidedly set back all progress that has been or can be made in wage payments.

"The payment of labor at a fixed rate per day tends to destroy individual initiative and to level down instead of properly and fairly rewarding the better workers.

"This bill is pernicious and should be defeated."

[From Coleman Sellers, jr., president, William Sellers & Co. (Inc.), Philadelphia, Pa.]

"This measure appears especially vicious; it is inimical alike to the true interests of the workman and of the employer.

"Its object is clearly to prevent increase of output, and to limit the earnings of the workman to the rate of wages decreed by his union.

"It is intended to hamper the efforts of the employer to improve methods, and to prevent the efficient workman from realizing the advantages which should accrue to him on account of his superior skill, intelligence, or industry.

"Time studies and analysis of procedure are not made to force men to work harder, but to make their labor more efficient by eliminating wasteful or useless effort, by improving methods, and by introducing devices and appliances which will improve output without increasing labor."

[From Otto H. Falk, president, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.]

"To any unprejudiced person a mere reading of this bill should be sufficient to reveal its true character and show how entirely inconsistent it is with any just principle for a fair basis of compensation and dealings between an employer and employee.

Of course, the only reason a proposed measure of this kind has any standing at all is because of the backing given to it by organized labor, and the fact that it has such support demonstrates better than any other argument the injustice of the position of organized labor in this regard. If the principle be true that 'the laborer is worthy of his hire,' there is no good reason why a suitable bonus or reward should not be paid for extra effort or ability."

[From John A. Topping, chairman, Republic Iron & Steel Co., New York.]

"House bill H. R. 8665, should it become a law, places a premium on inefficiency, extravagance and waste; furthermore, it suggests class legislation of the most vicious type.

"In view of all that has recently been written in support of preparedness, cooperation, and efficiency, it is hard to conceive how reactionary legislation of this kind could command serious support in Congress, for this bill ignores the practical lesson taught us by the great European war, which has brought home to us with telling force what organized efficiency, thrift, and cooperation has meant to Germany in her present struggle.

"The influence of the proposed bill should be obvious, for if passed, it would stimulate inefficiency, wastefulness, extravagance, higher costs, and additional burdens for the taxpayer to carry."

[From Elmer L. Corthell, Dr. Sc., president, American Society of Civil Engineers.]

"It is my decided personal opinion from careful study of industrial conditions in this and other countries, covering many years, that the result of the proposed act will lead fast to industrial and commercial disaster.

"My professional experience has brought me into rather intimate relations with nearly all the countries in the world; consequently, I can speak with knowledge.

"All observing and fair-minded men who have had the opportunity to trace the development of trade unionism appreciate its disastrous effects upon the industry and foreign trade of Great Britain, in which we are becoming a close second.

"Every effort should be made to remove rather than increase the burden on our industries. This bill, if enacted into law, will lead to irreparable injury and loss to the industry, commerce, and particularly the foreign trade of this country."

[From John F. Wallace, formerly chief engineer of the Panama Canal, now president of Westinghouse Church, Kerr & Co. (Inc.), engineers and constructors, New York.]

"I would say that this bill is so boviously to the disadvantage not only of the United States Government but also to all employers of labor as well as to labor itself, that it it difficult to conceive of its finding favor with our Senators and Representatives, who, if they are not, should be broadminded enough to see that efforts of this kind to turn back the hands of the clock of modern civilization and the efficiency upon which it is necessarily based are antagonistic to the best interests of all concerned.

"The prosperity of the American Nation outside of the personalities of its broad and progressive citizens has been due to the introduction of labor-saving machinery and the substitution of brains for manual labor in all classes of human endeavor, and it should be apparent to employees in the mass as much as to employers that increased efficiency in production has not only bettered the condition of workmen but also increased the available profits out of which the compensation to labor is paid.

"While this bill is apparently only directed against government employees, it will doubtless eventually be construed to cover not only employers of labor who work directly or indirectly for the United States Government but also extend the same restrictions to private employers of labor.

"Your efforts in giving this matter publicity and securing the necessary cooperation to check it should be much appreciated."

[From Henry D. Sharpe, treasurer Borwn & Sharpe Manufacturing Co., Providence, R. I.]

"I beg to state my emphatic protest against all such efforts to interfere with the simple and natural relation of employer and employee, either in Government shops or by indirect means in the great industrial works of the Nation, for the following reasons:

"1. There is nothing in so-called scientific management, or similar plans, that is unethical, unfair, or subversive of corrective relations between employer and employee. Congress itself, by one of its committees, some years ago made an investigation following the remarkable results attained in the Watertown Arsenal, the report being a general indorsement of methods there used.

"2. Critics of scientific management, or any bonus systems of reward, are either theorists, cranks, or those who have axes to grind, including the leaders of so-called organized labor.

"3. The industrial leaders in our country, who really know about industrial life, not only deprecate the practice of Congress in this matter, but consider the policies so advocated as absolutely contrary to an enlightened practice.

"4. Congressmen are ignorant to the point of stupidity in pursuing the subject as they have, in the face of so much intelligent practice in all our leading industries which encourage payment of work by performance, the workmen themselves thoroughly appreciating such methods of rewarding their labor.

"5. Payment of work according to performance is the only really American way to remunerate the industrial worker—America is supposed to bespeak opportunity, and opportunity to earn an increased wage according to performance should be his.

"6. The present tendency of legislation is strangely out of harmony with what is generally known—that a very great deal in our American life is utterly inefficient as well as extravagant. Why should not the Government lead in national economy by insisting upon having its own industrial work conducted efficiently? This means efficiency of labor, the workman's cooperation being secured by added remuneration. It does not mean faked up figures which please the eye of Congressmen but deceives no business man in this country as to the extravagant way in which national workshops are run.

"7. Congress in enacting such legislation is making itself ridiculous and serving nothing but the habits of lazy people, as well as committing a downright injustice to the workingman who wants to make his way even in Government employment."

[From William L. Ward, president Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.]

"By exercising patience, forbearance, and promptly adding to our fighting strength on land and sea we may escape a serious war with some foreign country.

"But all thinking men, and most men who only think occasionally, feel assured that after the foreign complications are settled nothing can prevent a strenuous commercial war with competitive nations—one that no high-revenue wall can protect from serious losses unless we use the utmost skill and energy, abolish all slap-dash methods of manufacturing, abolish all waste of effort, waste of material, waste of plant investment, and organize our industries on common-sense, scientifically efficient lines.

"It will not be a contest with weakened nations, but a trade conflict with people hardened and disciplined by the sacrifices they have endured. Their fight will be a trade fight for very existence; ours to hold and add to our wealth. If we are hampered by unwise restrictions, if our Government enacts laws to discourage effort, if the demagogue is to be in the saddle, we had better save our money for ships and armament and retire from business.

"We can not successfully cope with these coming events unless we develop far more strength, resource, and ability than we have at present. Our legislators must recognize the bigness of their positions and should deal with the situation not for the benefit of a class or for party advantages, but for the insurance to the whole people of the United States of their rights to carry on their enterprises in a manner to make for our success at home and abroad.

"We will have to be more temperate in our living and have a greater consideration for the rights of both labor and capital than ever before. Employees of all classes must have a greater share of the profits. The employer must be allowed to direct the efforts of the employee in order that the output per man per year shall be greater than that of any other nation. The health and well-being of the employee must be safeguarded, and finally the cost per piece or per pound must be as low as that of any other nation or our exports will be killed and business initiation prostrated.

"We have every requisite in this country to command the trade of the world. Are we big enough and broad enough to do it, or can we only learn the lesson through war and great hardship? Time will tell."

Mr. DUNLAP. Before we adjourn, Mr. Towne was questioned very closely upon the subject of contributions being raised to carry on the work of this committee of ten. I want to confess that I was the first contributor to that fund in the shape of my traveling expenses to come down here to Washington to find out what this situation is. I am a newspaper man. I have been at the game for 42 years. I have been all through it. This system has been introduced all over this country. I know its power, its following, and as a newspaper man

I am going to see whether or not Congress will pass any such bill as this myself, regardless of this committee.

(Whereupon, at 11.20 o'clock p. m., the committee adjourned to meet at 10 o'clock a. m., Friday, March 31, 1916.)

Committee on Labor,
House of Representatives,
Washington, D. C., March 31, 1916.

The committee this day met, Hon. Edward Keating presiding.

Mr. Keating. The committee will come to order.

Mr. Emery, whom do you wish us to hear first this morning?

Mr. Emery. My first witness is Dr. William Kent, of Montclair, N. J., who is the author of very well known books on this subject. He has written quite extensively, and among his books are Investigating an Industry and Mechanical Engineers' Pocket Book. Dr. Kent has been interested in this matter from the very beginning.

STATEMENT OF DR. WILLIAM KENT, OF MONTCLAIR, N. J.

Mr. Kent. Mr. Emery has introduced me as the author of several books. This book [indicating] was published originally 21 years ago, and since that time there have been 100,000 sold. This book [indicating] was published 2 years ago, and over 1,000 copies have been sold. I am a consulting engineer by profession, and have been connected with manufacturing industries in one way or another—as an employee, as superintendent of a department, as general manager, and as salesman. I think, therefore, I have been able to look at this labor question from all sides. I have been a student of political economy for over 40 years, and have done considerable work writing on economic subjects. I think that is a sufficient qualification.

I believe I was the first man to adopt the Halsey premium system. I think that was about 1888. I met Mr. Halsey on Broadway, and he told me he had a system that he intended to install the next year, if he got the opportunity. I asked him if he had any objection to installing it in a factory of which I was general manager. He stated that he had not, and I started in right away. At the time I started in with it an apprentice was getting a dollar a day and was doing some work that I did not know much about. He was a little raw on it. I told this man that if he exercised his ingenuity a little bit he might find some way of getting rid of lost motion, and that he might do higher class and faster work. Now, Halsey had recommended that I be very careful about starting this thing, and advised me against giving too high a premium, because he said that no one knew how fast the work could actually be done, and that we might be astonished at the amount that could be accomplished in a certain time. We started in and made a bargain with this man by which he was to get one-quarter of a cent for each piece that he made above 100. In about a week he was making 300 instead of 100, and his wages went up correspondingly. We started gradually, trying one man after another, and in about six months the system was introduced in the whole factory and worked well.

That system was published by Halsey two years later. It was adopted in England and Scotland, or, Scotland adopted the Rowan system, which was a modification of it.

There has been some uncertainty, apparently, in the minds of the committee and even of the witnesses themselves, as is shown by the discussion, as to just what these systems are and what is accomplished by them. I have written a short statement which I have here and which I think shows the difference between the different systems.

The first applies to day work. That means $2 a day and 200 pieces. The result is that nobody is satisfied. The workman wants $3 a day; the employer wants 300 pieces, while the consumer wants lower-priced goods.

Then comes the piecework. The employer offers and the workman accepts 1 cent a piece. Nobody knows what a fair day's work is. The piecework stimulates the workman to acquire extra skill and to avoid wasting any of his time, but he works in the old way with some useless motion. He doubles his output and gets $4 a day, and the employer cuts his rate to $3. Then the workman stops his improvement in speed and works regularly at the $3 rate.

In another shop we have the same original condition. They adopt the Halsey premium system, giving $2 a day for 200 pieces or less, and one-quarter of a cent for each piece over 200 pieces a day. The employer does nothing to study lost motion, but he gives the workmen facilities, such as good tools and prompt supplies of materials. The workman, stimulated by premiums, acquires great skill and advances his earnings. He gets for 200 pieces $2; 400 pieces, $2.50; 600 pieces, $3; 800 pieces, $3.50. The Rowan premium system is a sliding scale of premiums, so that the maximum wage for any output is $4 per day.

The Taylor system does not depend on the workman to find out for himself the best way of working, but puts a time and motion study man on the problem, and he finds out that the saving of lost motions makes it possible for a good workman, without any undue speeding, to make 400 pieces a day. He offers $2.50 a day for any product below 400 pieces, $3 a day for 400 pieces, and one-half cent per piece above 400.

The Halsey premium system, the differential piece-work system, the Gantt task and bonus system, and the Emerson efficiency system of fixing rates are used by Taylor-system men, but the amount of wages under any one system is a matter of bargain or agreement between the employer and the workmen.

Last night a good deal of time was spent in a discussion as to how much should be paid for the ninth pair of shoes. There was a great deal of misunderstanding, apparently, between the gentleman who asked the questions and Mr. Thompson, who answered them. They did not seem to get anywhere. In answering that question I would say that the price to be paid for the ninth pair of shoes is a matter of agreement between the employer and the employee. It seems to me it is entirely a matter of what is fair, and it may run from 50 cents up, on the theory that the employer has furnished the employee with the facilities for doing the work, and that therefore he is entitled to some profit. Perhaps they split the difference, and make it 50 cents. In another way, you might say that the man is very anxious to get nine pairs of shoes, and therefore would be willing to pay a dollar for the extra pair. Perhaps they agree on that. Or, perhaps the employer says, "There is a big profit in these shoes, and I want to stimulate that man to the extent that he will make 10 pairs of shoes, and I am going to give him $1.50 or more." All these ways have been adopted. If 1 cent is the standard basis, or price, they make it one and a half, or 2 cents, according to the condition of the business. It is, to my mind, entirely a matter of bargaining and agreement between the parties as to how much that shall be. As to whether it is fair or not, that, I think, is a question for discussion between them, or between them and a board of arbitration or a court, if it is necessary. I think it is certainly entirely outside of the question of this bill.

I shall take up now a little matter that was mentioned last night. Mr. Taylor's work at Bethlehem was mentioned. Senator Borah did a great injustice to Mr. Taylor when he picked out a few paragraphs in regard to Mr. Taylor's work. By elaborating on them and by picking out just those paragraphs, a false impression has been created in the minds of the people. I am very sorry that Mr. Dunlap made the statement last night that he wished Mr. Taylor had not done that; that that was a thing that Taylor was wrong about. I wish to take exception to what Mr. Dunlap said, although he is our own witness in that matter. I feel that if anyone will read the whole of that story and know exactly what Taylor did there, exactly how he did it, and the reason for his doing it, it will be agreed that he did exactly the right thing under the circumstances.

Any man in charge of a number of men loading pig iron would say that the best way to do it is to do what we do in other matters of life, and that is to select the men who are best fitted for the job, or the animal or the machine best fitted for the job. I might say that members of Congress are sent here for that very reason. You are picked men; you are supposed to be the men for the job. Suppose, instead of having men carry that pig iron in their arms, you should say, "We will have horses do that." We will say that there are three kinds of horses. You may select a Percheron or a Clydesdale, or you can get a slender race horse, or, again, a weak horse that draws a grocery wagon. Of course, we all know that the best thing to do is to get one of the big horses that you can work so many hours a day with so many rest periods, to carry that pig iron at so many dollars a day.

The man will say, "I have a valuable horse here; I must not overwork him." As we are not back in the dark ages and all men can not do that kind of work, the best thing to do is to get a man of the Percheron or Clydesdale build, a man who can do the work easily. Now, Mr. Taylor picked out that kind of men. Did he do an injustice? That is the question. After it was rumored around that these men were getting $1.75, the men began to come in from all around the country to get these fine jobs. The question arose whether $1.85 was too low. The proof of this is that these men came to get these jobs and wanted them. They were offered higher prices to go to Pittsburgh, and they went, but they came back, because they were not satisfied with the conditions that they found. So I say in doing that Mr. Taylor did nothing unethical and nothing inhuman or unfair.

Let us take the New York police force as an example. I do not know that what I have to say will apply to Washington, but I suppose it will. You get men of splendid build and fine physique. They have to be that kind of men, because they have to stand all sorts of weather. You have to have a man of courage, and you pick out these men very carefully. Probably you do not pay them enough, but that is another question.

If you want a fireman who can climb ladders and who can be exposed to danger, you pick out a splendid class of men. They may not be paid enough, but the selection is the same kind of selection that we use. It applies equally to all these classes of men.

The post office has been mentioned as an example. It would be a good thing to use the Taylor system there. Instead of having these weaklings, as many of them are, although there are some splendid men among them, carrying these heavy bundles, and using their legs to carry them, they could give them an automobile, or give them good facilities to carry them. I would rather see the people of this country pay a little more for postage, if necessary, to give these men proper compensation. If you are going to have them use their legs to carry heavy material, get the kind of men that can stand the fatigue. That would be scientific management for the post office.

Now, let me take up this bill. I congratulate the committee on what it has done in striking out the "whereases." I congratulate it also on making the amendment. It shows that the committee is not hidebound, but that it is willing to reason and to try to make things right. If they can strike out the enacting clause, it will be better; if they can postpone it for one year, it will be better still.

While the preamble is stricken out, it gives us, as well as we can get from any other source, the idea on which the bill is based. It makes certain statements, and these statements have been denied by other witnesses. The question is whether these statements are true or false, and is one that requires investigation. That is what I ask the committee to do—to investigate the truth of the statements of this preamble. I shall not take up your time to give my opinion on the subject, because it would be an opinion, and I do not think you want opinions. You want facts.

I hope you will get some from Gen. Crozier this afternoon.

What is the underlying motive of this bill? So far as I have been able to discover it, there are two motives, one of which is absolutely praiseworthy. That is human sympathy. I think you are sympathizing with the laboring man, and that is one of the motives of this bill. I can stand behind you in that, for my whole life has been in sympathy with the laboring man, and I think that the fundamental motive of the real, honest supporters of this bill is sympathy. There is, however, another motive that is not so praiseworthy. It is an unreasoning fear—fear that something is going to happen to somebody; that workmen are going to be thrown out of work by scientific management. I think that is one of the fears. It is the same fear that led the English workmen over 100 years ago to burn down mills; it is the same fear which caused the opposition to the steamboat, the sewing machine, and the linotype. The linotype is now used in the Government Printing Office, but I suppose you are all familiar with the fact that the linotype was introduced all over the country before it was put in the Government Printing Office. The printers have not had their wages reduced, nor have they been thrown out of their jobs. There are, in fact, more printers to-day than ever before.

There have been charges against scientific management. They have claimed that human beings would be treated like machinery, and that they would be consigned to the scrap heap. These are questions of assertion. There is no use of answering them all by opinion. Let us trace these charges to their foundation, and if they are not untrue, let us find to what extent they are true. If you find that the last drop of blood is being drawn, and that the men are consigned to the scrap heap, try to find out who has been doing this. Where is the man, and what is the reason? Those are the questions to be answered. Why was he thrown into the scrap heap? You will find, if it is true, that it is not due to scientific management, but to the abuse of it. These conditions should be corrected if they exist in fact. Get after them and find out the real reason why they exist, but do not complain and say that we must throw off the stop watch. We are killing many men to-day in the coal mines. The thing to do is to investigate the causes of the explosions. We do not say that we will have to give up the coal because these men are getting killed. We are killing many people on the railroads every year. We are not killing as many passengers as formerly, but we are killing a great many who get on the tracks. We do not stop the railroads on that account. The thing to do is to get at the particular cause of the accident and to stop that particular detailed cause. The thing to do is to get the facts, and figure out just what is the true situation, the true condition.

What has the committee done in regard to this matter? We know that there was a committee that investigated Watertown Arsenal. I believe that committee was composed of Mr. Redfield, Secretary of Commerce, and Mr. Wilson, Secretary of Labor, and others. They investigated the evils that we have heard so much about four years ago, and they recommended that no legislation be had on the subject. What new facts have you obtained since then? Nothing new to show that the stop watch in the last four years has done this. I have not found any evidence or anything to indicate that. The thing to do, as I say, is to find out what the conditions are that exist now at Watertown Arsenal. I am going to submit this proposition, that you employ scientific management to find out the truth. I do not mean necessarily that you should use the stop-watch method, but scientific investigation. Find out the facts by the best methods possible. I suggest that you go about it in this way: Instead of employing Prof. Hoxie, go about this in another way. He and his commission of labor got together and wrote a book, as you will remember. If you will read that book you will find what a muddle was made of the subject. They concurred in a report that you can not make head or tail of. That is not the way to do it. That is not the way to find out the facts.

Find out who does know about Watertown. I suggest that you appoint a committee composed, say, of Gen. Crozier, for one, Mr. Alifas for a second, and Mr. Minor Chipman for a third. Mr. Chipman has investigated Watertown Arsenal and probably knows more about it than anyone, with the exception of Gen. Crozier. If those three men go there, let them inspect the books, the health records, the physicians' records, and every other record, and get all the facts on record.

Then let these men sit around a table and draw up a paper saying: "We have found the following facts and agree on these conclusions. On these things we concur. On the following things we disagree as to such and such conclusions." There may be three different reports; there may be two against one. Whatever they do, they bring in a majority report showing the facts on which they require more light and in regard to which they take more time and more testimony. Then, let us see if we can not narrow it down, and let that commission come before the committee; let them state their conclusions and be examined and cross-examined, and then let the committee put in a majority and minority report. I submit that is the sensible way to go at the thing and find out the truth.

Mr. Denison. Did you say Mr. Chipman?

Mr. Kent. Yes. He was employed as counsel by the laboring men. He has not yet reported for the abolition of the stop watch. If you can get a man who knows that the stop watch is an evil thing, put him on the committee.

Mr. Denison. Could we get him on the committee?

Mr. Kent. I think so.

I want to say something more about the amendment to this bill. It is an amendment that cuts away, apparently, half of its poison. Instead of prohibiting the stop watch absolutely it only prohibits its use for the purpose of fixing a standard of service. They can use the stop watch if it is confined to the discovery of defects of machinery, the slippage of bolts, or the imperfection of materials, but you can not use it if it has anything to do with standardizing the time of the workmen.

I have made some experiments myself. We had trouble once in the making of bolts. The trouble was that the same bolts were made of different diameters, so that a shifting of the belts was required. We found that it was not a question of the time that it would take a man to do this thing. It was a question of combination. The time-study man said that it took all the way from 10 to 15 minutes to perform a certain operation. Now, what was the reason? The belt had to be shifted several times, and sometimes the man could do it in 10 seconds, and sometimes it took a minute. The man bungled sometimes. Why? He did bungle, but we found that he had a rather loose belt and belt shifter. Well, the thing to do was to put in a good belt and belt shifter. Is that a barbarous way to do things? It is a question of which system is the best.

Have a man work one day on one system and one day on another and find out. If you do that, how are you going to distinguish between the man and the machine? If you use the stop watch on a man, you say it is criminal. Did I do anything criminal when I investigated in regard to the bolts? Don't you see how absurd it is? Don't you see that it is absurd to try to settle that thing and say it is criminal for this purpose and not for the other purpose? I think this bill is utterly vicious and abominable. I hope that the committee will postpone legislation. I do not ask them to report this bill now. I do say, go and investigate the conditions now. We have other questions, much larger questions, that should be considered now. There is the Mexican question, which deserves a good deal of attention. There are other questions which should come before this one.

Have a committee continue for a year and let a report be made on this question next year, after a scientific investigation of the subject.

Mr. SMITH. Are you a manufacturer at the present time?

Mr. KENT. No, sir; I have written several books on this subject.

Mr. SMITH. Yes, sir; I have heard of your works. You have been a mechanic?

Mr. KENT. Not exactly a mechanic. I have been a superintendent and a manager. I have done a good deal of work myself, but I did not learn a trade.

Mr. SMITH. You are not in entire sympathy with Mr. Taylor's method of getting facts and figures?

Mr. KENT. Absolutely.

Mr. SMITH. Do you think it was right for him to pick out the best men in the country?

Mr. KENT. Certainly; the same as we would pick out policemen and firemen.

Mr. SMITH. The same as the men are picked out for the purpose of presenting this matter to this committee?

Mr. KENT. We did not pick them?

Mr. SMITH. Well, you have come here with the finest legal talent in the United States. You have submitted the brief of Mr. Brandeis, now a member of the Supreme Court of the United States, or to be, and Mr. Emery is one of the most celebrated attorneys in the United States. What chance do you think the ordinary individual would have in presenting the case you gentlemen have presented here?

Mr. KENT. The workmen themselves in the past did ask Mr. Brandeis to present their case.

Mr. SMITH. Are you in sympathy with Mr. Brandeis's position, as expressed in his brief?

Mr. KENT. I can not remember just now what the brief said. I read it very hastily. My impression was favorable at the time I read it.

Mr. SMITH. You think the wages should be fixed by the employer?

Mr. KENT. Certainly not.

Mr. SMITH. I thought you said the rate was estimated, and then if the operator made more units in a given length of time, it was agreed between him and the employer what extra compensation he should receive?

Mr. KENT. That should be agreed upon with the employer or disagreed upon, as they see fit.

Mr. SMITH. I understood you to say that the workman at first should be given so much a day for his day's work. We will say, for instance, that he makes 20 units?

Mr. KENT. Yes, sir.

Mr. SMITH. And if he makes 21 units the employee should be paid according to the same rate that he would get for the 20 units, but the employer and he should agree as to what the compensation should be. Is that right?

Mr. KENT. It is a matter of agreement.

Mr. SMITH. He starts at $2 a day?

Mr. KENT. I merely took that as the basis that had been paid.

Mr. SMITH. How is that fixed—by the employer or the workman?

Mr. KENT. Sometimes by the employer and sometimes by a trade union. It may be fixed in a number of ways. I referred to a case in a factory where they got $2 a day, and there were 200 pieces, and nobody was satisfied.

Mr. SMITH. I understood that, but when you say that the day's wages are not fixed by the employer——

Mr. KENT (interposing). An employer opens a factory and says, "I am going to pay so much a day for workmen." That is the offer that he makes.

Mr. SMITH. He fixes that himself?

Mr. KENT. Yes; but he can not fix that too low.

Mr. SMITH. If you will pardon me, I should like to refer to the shoe illustration again. Do you think that the piece rate should not continue at the same price as is paid for the number of pairs that make a day's work? If he makes in excess of that, should he not be paid at the same rate?

Mr. KENT. I think I have said in my direct testimony that that was a matter for agreement, according to the conditions. As I remember it, $8 was the price for the eight pairs of shoes, and the question was how much should be paid for the ninth pair.

Mr. SMITH. And you thought it should not be the relative prices paid for the eighth.

Mr. KENT. I said that the matter could not be determined by us. I said it would be a matter for agreement between the parties, according to the condition of the business.

Mr. SMITH. Did Mr. Brandeis think it should be the same relative rate for the eight pairs?

Mr. KENT. I do not remember. I said in my testimony it should be anywhere from 50 cents up to $1.50—that is, give a higher rate for the excess. If the manager said that he wanted to use lots of shoes, it might pay to pay a higher rate.

Mr. SMITH. That extra price, whether it is called a bonus or extra compensation, has never been standardized by the Taylor system, or any other system, has it?

Mr. KENT. No, sir.

Mr. SMITH. And the employers do not agree upon the price that should be paid?

Mr. KENT. Not only that, but an employer may offer different bonuses on different jobs.

Mr. SMITH. Then, there is no uniform price to pay for the extra labor?

Mr. KENT. The premium should be from 33⅓ per cent up. If you offer less than that, it is not enough to stimulate the men.

Mr. SMITH. A gentleman has very kindly presented me with a copy of Mr. Brandeis's brief. It is very interesting. You will find an illustration given by Mr. Sumners here, and also an explanation by Mr. Brandeis. The contention seems to be that the extra compensation should be the unit of value paid for each pair of shoes based on the day's work. This is not at all clear to me, and with the committee's permission I should like to read from page 46 of Mr. Brandeis's brief. It reads as follows:

> Mr. BRANDEIS. Taking this very matter of the piece rate that Commissioner Prouty referred to, if a man, for instance, had been earning, ordinarily, $2 a day, at a given number of rates representing, perhaps, 10 pieces of this work, then, if he makes 11 pieces, he gets $2.20, and if he makes 12 he makes $2.40, and the like.

That was exactly Mr. Sumner's question, and Mr. Brandeis's understanding of it was that the man should not divide the pay for the extra pair of shoes that he makes with the manufacturer. Why is that? Because the manufacrurer's profit for the whole industry wrapped up in each individual share of shoes, being just the same for the first pair, the eighth pair, the tenth pair, or the twelfth pair?

Let me call attention to one more thing in order to show how indefinite they are in their conclusions about this. I want to call attention to the "whereases," and the "as it were's." This appears on page 47, in answer to a question along the same line. Mr. Gantt was on the witness stand and he and Mr. Brandeis were trying to get together. I want to read about five lines:

> Mr. Brandeis. That is, he gets a piece rate, as it were, after he has reached the new standard; then he gets a piece rate?
>
> Mr. Gantt. In other words, it is different work for the unskilled and for the skilled. When the man becomes skilled, becomes practically in the expert class, you might say, then we pay him piecework; but we teach him how first.

I remember when I was a boy at school we came across a line in Virgil that had about five adverbs in it, and nobody could translate it. The professor said, "That means beating around the bush." Now, in those five lines which I have just read, I find these phrases: "that is"; "in other words"; "as it were"; and "you might say." It seems to me that is pretty indefinite.

I think any of you who have employed labor can tell just as soon as a man picks up a tool whether he is skilled or not. I believe a great many men who are capable of doing a lot of work in a day would not work one day if a man was standing around and holding a watch.

Mr. Kent. Why not?

Mr. Smith. Well, it affects the nervous system.

There are a great many employments that this would not apply to. I do not know how many men are working in factories and so on, but I can say that so far as agriculture is concerned, we pay our men $3 a day. That refers to common labor. Last summer we were glad to get them at that price. Why? Because the cities are taking them up, and the opportunities are so great in the cities that you can not get them to go to work. I am in favor of efficiency. I realize that the employers share with the man and are glad to see him get along. They start a man out with a wheelbarrow, and after a while he gets to be superintendent. They are glad to see him get ahead.

Now, you have the benefit of skilled counsel—the best in the United States. I know that. I know that a good lawyer is one who can present the good side of any question.

As to Mr. Taylor's system, if anyone who was impartial could hear some of the remarks that have been made about it they would not be so highly impressed. They talk about the increase of wages under the system, and compare labor paid by the day and by the piece. If a man makes 10 pieces, and that is 2 pieces or 2 units more than a day's work, I do not see whey he should not have a relative amount. You can not gauge any business by the very exceptional man or the high-grade man.

Mr. Kent. Have you asked me a question or are you making a statement?

Mr. SMITH. I just wanted to call attention to what Mr. Brandeis asked, to show that they were about the same questions that have been asked here. I merely wanted to read that from the book to show you. The question was whether or not you believed that this should be done on a pro rata basis, or whether it should be divided up with the manufacturer.

Mr. KENT. I think I said that was a question af agreement. I said that the question as to the division of profit was one to be settled by bargaining, and that if the manufacturer was exceedingly anxious to get a big product out, because there was a big profit, and was willing to pay more than the regular rate, he might pay $1.50 extra for the extra pair of shoes. If he did not feel that way about it, and thought the profit should be divided, he might say to the man, "I will give 50 cents." Then the man might say he wanted a dollar, and the employer would say, "Well, I guess I will let you have it."

Mr. SMITH. Mr. Brandeis said his idea was that they should be paid a uniform rate.

Mr. EMERY. May I call attention to a slight error here? I think that the gentleman has mistaken Mr. Brandeis's inquiry for an opinion. That seems to me to be an inquiry rather than an opinion, and you will notice in the testimony that the witness responds, "That is not exactly it." Now, Mr. Brandeis's language appears on page 43, where he says:

> It must not be supposed that the introduction of the piece-rate system is scientific management, or even an approach to it. On the contrary, the existence of the piece-rate system often proves the greatest obstacle to the introduction of scientific management. Under scientific management the increase of wage is coincident with reduction in cost, but under the Erie piece-rate system the increase in wages was attended by reduced performance.

Then he asks Mr. Gantt the question, "Is this what you mean?" And the witness responds, "No; that is not exactly it." That is not Mr. Brandeis's conclusion.

Mr. KEATING. The witness's answer to that question was about as definite as to the other one.

Mr. SMITH. Are not the Taylor system and your system opposed to piecework?

Mr. KENT. Yes, sir.

Mr. KEATING. Opposed to piecework?

Mr. KENT. When I made that answer I had in mind the average kind of piece rate, based upon the old-fashioned piece rate. I am opposed to that kind of a piece rate, but a piece rate made after investigation is an altogether different thing, and that I am in favor of. In this book [indicating], which was written two years ago, I stated that I was in total sympathy with labor and said that scientific management would not be a success unless it took into consideration, as one of the first elements, the satisfaction of the laboring man and the improvement of his condition.

Mr. DENISON. Does the scientific method that you have been speaking about in connection with the employment of labor mean an application of the principle of the survival of the fittest?

Mr. KENT. Yes, sir.

Mr. DENISON. Do you believe in the absolute application of the doctrine of the survival of the fittest?

Mr. KENT. With this modification. When you find a man who is unfitted for a particular job, it is the duty of the employer, the city, or the community to find a place for that man. He must not be thrown out to starve.

Mr. DENISON. Is not that rather a dream?

Mr. KENT. It must be so eventually. It must be what we must come to.

Mr. DENISON. Then, in this scientific management, you do apply the doctrine of the survival of the fittest?

Mr. KENT. To that extent; yes, sir.

Mr. DENISON. If the particular employer does not have a job that he can give the unfit man, the man must be eliminated?

Mr. KENT. I say it is the duty of society——

Mr. DENISON (interrupting). I am not talking about the duty of society. It is your duty under the present system to eliminate him.

Mr. KENT. He is bound to eliminate him, because his competitors will force him to do so.

Mr. DENISON. So that sooner or later other people will have to take care of the man who is unfitted for the job?

Mr. KENT. He will be able to get a better job, probably. I want the committee to find out what does happen to the man who is thrown out; find out what becomes of him. Get statistics on that.

Mr. LONDON. The doctrine of the survival of the fittest, in its application to human society, means something different, in your mind, than the doctrine of the survival of the fittest in the animal world. While in the animal world survival of the fittest means that the animal with the stronger claws and stronger teeth will crush the weaker animal, it does not mean that in society?

Mr. KENT. No. The whole progress of civilization is modifying that doctrine of the survival of the fittest so as to ameliorate that condition.

Mr. LONDON. It is a complete misapplication to speak of it as if it meant that the weaker must be eliminated from society?

Mr. KENT. It does not mean eliminated from society; it means from the particular job for which the man is unfitted.

Mr. LONDON. You would promote vocational education?

Mr. KENT. Yes, sir.

Mr. LONDON. And old-age pensions, and all sorts of methods that would help every human being to live the life of a man? Let us make this clear. All efficiency methods seek to promote efficiency and increase the productivity of labor; is that right?

Mr. KENT. Yes, sir.

Mr. LONDON. Mr. Brandeis, who is an advocate of efficiency methods in industries, is also a strong advocate of collective bargaining between capital and labor, is he not?

Mr. KENT. I do not know.

Mr. LONDON. Well, I do know. In how many shops or industries have these efficiency methods been introduced?

Mr. KENT. I have not the statistics. I think that Hoxie found 35. If you bring the Halsey premium system in and the time study, I think they run into the thousands.

Mr. LONDON. Can you give us some idea as to the proportion of these shops in which the principle of collective bargaining exists?

Mr. KENT. No, sir; I have never inquired into that. I have heard that is the case with the Plimpton Press.

Mr. LONDON. In dealing with human beings, do you think you can introduce a new method in an industry without consulting the men who will be affected by the new method? In other words, when you deal with human beings and not with machines, don't you think that in introducing new methods you must consult the wishes of the people whom the new methods will affect?

Mr. KENT. Yes, sir.

Mr. LONDON. In other words, every efficiency system calculated to increase the productivity of the men in the factory must involve the cooperation of the men themselves?

Mr. KENT. Yes, sir.

Mr. LONDON. And in order to attain the full measure of that cooperation you must give them an opportunity for collective expression of their wishes.

Mr. KENT. I don't see that it is at all necessary. I have no objection to it, but as to laying it down as a principle, I can not go that far.

Mr. LONDON. In other words, you would have the employer deal with each individual separately.

Mr. KENT. I think that is preferable, but it does not necessarily exclude collective bargaining.

Mr. LONDON. Is it preferable?

Mr. KENT. It appears to you to be so. It is outside the question of a stop watch.

Mr. LONDON. Let us see if it is outside. You try to obtain greater productivity on the part of labor. That is the object of efficiency.

Mr. KENT. Productivity on the part of capital, machinery, and labor, the whole amount of goods to be distributed to the whole community.

Mr. LONDON. Exactly. But you try to get out of the worker a larger product.

Mr. KENT. Yes.

Mr. LONDON. In order to obtain a larger product you change the conditions of work.

Mr. KENT. Yes; improve them.

Mr. LONDON. You improve them. Now in order to obtain these improvements you must have the good will of the men, must you not?

Mr. KENT. Yes.

Mr. LONDON. Can you obtain the good will of the men if you suppress the effort on the part of the worker to organize?

Mr. KENT. I don't understand how——

Mr. LONDON (interposing). Can you obtain the good will of the laborer if you suppress his effort to organize for mutual benefit?

Mr. KENT. The things seem to me so different that I can not see what connection they have with each other.

Mr. LONDON. Then the question of collective bargaining has nothing to do with efficiency methods?

Mr. KENT. Not necessarily.

Mr. LONDON. You spoke of the introduction of the machine, and the opposition of organized labor in the past to the introduction of the machine, and you gave as an illustration the introduction of the linotype machine. Do you know that the printers spent $20,000,000 and one year in strikes in order to obtain a reduction of hours of labor after the linotype machine was introduced? Do you know that fact?

Mr. **Kent**. Say that again.

Mr. **London**. The printers that were affected by the linotype machine spent $20,000,000 and one year in striking in order to obtain a reduction in hours of labor after the linotype machine had been introduced.

Mr. **Kent**. Where did they get all that money?

Mr. **London**. Where did they get all of that money? They surely worked for it.

Mr. **Kent**. I am not aware of the fact.

Mr. **London**. That is an historical fact.

The **Acting Chairman**. I helped to contribute to it, so I know it is a fact.

Mr. **London**. What I am trying to get at is this, I have no objection to the introduction of efficiency methods, nor can anybody else have to it.

Mr. **Kent**. I am glad to hear you say that.

Mr. **London**. Because an efficiency method means using the best tools, the best methods of production, the best materials, and the best available data. It is scientific in the sense that it gathers together scattered bits of knowledge and systematizes knowledge. It is scientific in that sense, but the objection that comes from the working people, and that is what you scientific people should grapple with—the objection that comes from the working people is this: That just as machines were introduced without regard to the effect the introduction of machinery would have upon labor, just so are efficiency methods being introduced by scientific experts without any regard to what effect it will have upon labor, and isn't that the most importat question that the scientific man should handle?

Mr. **Kent**. I rather think it is.

Mr. **London**. Well then, now the right of collective bargaining being one of the elementary rights of the working people, can not be disregarded when you deal with the introduction of new methods of efficiency.

Mr. **Kent**. I didn't get that.

Mr. **London**. The right of the working people to organize and to introduce the principle of collective bargaining can not be disregarded by the scientific expert who seeks to introduce modern efficiency methods. Do you get that question?

Mr. **Kent**. Can not be disregarded if he is brought up against that question.

Mr. **London**. Aren't we up against it all the time?

Mr. **Kent**. In a great many industries we are not, I do not think.

Mr. **London**. You mean where labor is not intelligent enough to organize?

Mr. **Kent**. Not intelligent enough to organize?

Mr. **London**. In those districts where labor is not intelligent enough to organize you are not up against it?

Mr. **Kent**. It may be lack of intelligence, or it may be being satisfied without the organization. They are getting pay higher than the union pays and are well treated. They would have no benefit in organization.

Mr. London. Your study of political economy for the last 40 years leads you to the opinion that in those industries where workers are not organized the best conditions obtain?

Mr. Kent. In many of them. But I am willing to say that the unions have done a great deal of good in calling people's attention to the lack of proper facilities and the unhealthful conditions and long hours, and are doing good in improving conditions and educating manufacturers up to doing the same thing.

Mr. London. Isn't the contrary the fact, that better conditions prevail in those industries where workers have organized?

Mr. Kent. I think that the best conditions in some industries are found in unorganized industries.

Mr. London. Will you name for us some of these industries?

Mr. Kent. Yes; Mr. Feriss' factory; it is unorganized.

Mr. London. That is a factory. Will you please give me the name of one industry where the condition of the workers is ideal or is better than in organized industries?

Mr. Kent. Why, they are good in both of them.

Mr. London. But name an industry in which the workers are not organized, and in which better conditions prevail than in organized industries.

Mr. Kent. I can not do that, because in some of the organized industries ideal conditions prevail, and they can't have anything better.

Mr. London. Then you can not name a single industry in which the workers are not organized and where better conditions prevail than in organized industries?

Mr. Kent. Not better; no.

Mr. London. Or as good?

Mr. Kent. I think as good in some.

Mr. London. Where are those now?

Mr. Kent. The Yale & Towne industry is not organized.

Mr. London. That is the name of a company. I am speaking of an industry. You have studied political economy for 40 years. Well, the study of political economy necessarily involves the study of the condition of the working people; is it not so?

Mr. Kent. The subject of political econcmy is so vast that no living man can comprehend it all.

Mr. London. I know, but it involves a study of the condition of working people?

Mr. Kent. Yes.

Mr. London. Can you name one industry in which the workers are organized, and in which conditions are not good?

Mr. Kent. In which the workers are organized and in which the conditions are not good?

Mr. London. Yes.

Mr. Kent. I believe all industries are organized.

Mr. London. But you mean to say that there are some individual factories in which conditions are superior to those demanded by organized labor?

Mr. Kent. I did not say that. I said that some of the factories under organized labor are ideal and therefore there can't be anything superior.

Mr. LONDON. But there are some individual shops where the workers do not enjoy the benefits of organization, but enjoy good economic conditions?

Mr. KENT. Yes.

Mr. LONDON. Individual instances?

Mr. KENT. Yes.

Mr. NOLAN. I would like to ask one question. Do you know of your own knowledge whether it is true that the employer consults his employees regarding the price to be paid for the day's work, and the price to be paid for the bonus and premium, after that day's work is performed under the various scientific management systems?

Mr. KENT. Yes, it is frequently done, it is a matter of bargain between employer and employee.

Mr. NOLAN. Isn't it a fact that investigation proves that the proponents of scientific management claim that there is not any necessity for any bargaining between the employer and the employee, because their system determines the price?

Mr. KENT. I have seen no such statement.

Mr. LONDON. Well, it has been frequently stated here that there was no necessity for it, that the very element of scientific management prevented the necessity of taking into consideration the worker at all, that they study it from a scientific basis and fix the rate.

Mr. KENT. I think you must have mistaken the testimony. I would like to have you show me any testimony that has been offered of that kind.

Mr. NOLAN. We have had it here in some of the hearings, and it is in some of the books, that the individual has no concern in the fixing of the price. The time study method and the system fixes the price.

Mr. KENT. I wish you would give me some literature on the subject. I have never seen such a statement and do not believe that is a fact.

Mr. NOLAN. That is exactly the information that has been given to this committee from time to time, time and again in the Sixty-third Congress. What opportunity is there for an individual under this system to have any say? The employer arbitrarily fixes the price.

Mr. KENT. Why, there is every opportunity. The man is brought into consultation.

Mr. NOLAN. Take the testimony of Mr. Dunlap last night on the proposition of the eight pairs of shoes. Who determined that proposition?

Mr. KENT. As I said in my testimony, it would be determined by bargaining as to how much he should get, whether 50 cents or a dollar or a dollar and a half

Mr. NOLAN. But you don't know of any instances where any company in this country makes a practice of consulting their employees regarding the price?

Mr. KENT. Yes.

Mr. NOLAN. What concern?

Mr. KENT. I have done it myself, and I believe Mr. Feiss is doing it all the time.

Mr. NOLAN. He consults his employees regarding the bonus to be paid?

Mr. KENT. Yes.

Mr. NOLAN. Is that the common practice?

Mr. KENT. My impression is that it is, that these matters are bargained.

Mr. NOLAN. But you don't know?

Mr. KENT. No, not of my own knowledge.

Mr. NOLAN. I have only one other question to ask. I am going to ask you, Mr. Kent—you have been here during all these hearings?

Mr. KENT. I came yesterday morning.

Mr. NOLAN. From your experience here, does it not occur that the efficiency engineers should get together and systematize their various methods so that they can agree on some method to be used in their profession?

Mr. KENT. They are getting together.

Mr. NOLAN. Don't you think that from your experience here there ought to be efficiency applied to them and to their methods?

Mr. KENT. And to every department of human investigation, including Congress.

Mr. NOLAN. I agree with you on Congress.

STATEMENT OF RICHARD A. FEISS, MANUFACTURER OF YOUNG MEN'S CLOTHING, CLEVELAND, OHIO.

Mr. FEISS. The time being limited, I will try to limit myself to a few points that have come to my attention during this discussion. I had the idea of bringing forth more voluminous facts and statistics on the effect of time study, especially as that seems to be the bone of contention.

It is very natural that time study should be the bone of contention, but it is the thing that is most likely to be misunderstood by the layman and others and it is the thing that has been at times abused. I will be candid about it.

In this connection, however, I want to point out that not only time study, which is a means for investigation, but any other good that man has devised has been abused. I read of a case not long ago of a man murdering a woman with a hammer. Shall we therefore abolish hammers throughout the country? We know that chemistry has devised a means of concocting prescriptions that are poisons. But shall we abolish chemistry because it has been abused?

Now many of the principles of scientific management are new. Scientific management is a developing science. But shall we nip it in the bud because like every new science that was ever created it has been used by the unscrupulous and by those who do not understand for purposes which it was never contemplated it would be used for, and for purposes which have no moral or other good?

Now I want to make particular note of some things which were mentioned here yesterday, the part quoted from the Hoxey report of the Industrial Relations Commission. I want to correct some misunderstandings. At the time that appeared, Mr. Hoxey wrote me saying that the extract in the report of the Industrial Relations Commission did not represent his work, or the work of his committee, and therefore he was getting out a book that is now published by Appleton & Co. I want to quote a little from some of the things we know, that is some of the results that are obtained, and give a little better explanation of what time study bonus and other methods are.

For this matter, it may interest you to know that I am myself a practical man, and know my trade, that of clothing maker, and spent some years at making pants. Now when we started a certain amount of responsibility was put upon my shoulders, to develop a thing for which we had always stood in that community, and upon which our good name and the good name of any man depends, the method of dealing with other human beings that we come in contact with. Our firm has for three generations stood forth not only for an average, but perhaps for a little better than some of its neighbors. We know that all men, workmen, men in the office, and managers, are about the same. Mr. Taylor said once that the damned fools were not limited to any one calling or profession, but are about equal all through.

We found, however, that as our responsibility grew, the management had an active responsibility, and that responsibility entailed with it the imparting of certain knowledge to others who had not arrived at that stage of responsibility. Our whole organization was based upon that proposition, and therefore simply from the point of view of paying better dividends to a man or woman at the machine, as well as the man in the office, and the man who handled the finances, and the man who ultimately purchased our wares, we were interested in getting together, because it meant both individual effort and the efforts of a large group, whether you consider those within the factory or those without the large group. In order that those efforts shall be for the mutual benefit, you have to cooperate all along the line.

In order that we might better cooperate with our workers and in order that we might put part of the responsibility on their shoulders, and in order to turn out the best possible product of the right kind, we had to develop a great number of methods, and we had to put science into it. During this period of development, not a man in our organization ever heard of Mr. Taylor or his system. We were forced to devise methods of routing work. How? By scientific investigation and the use of every possible instrument that that investigation could bring for its purposes, and in most every case we had to use some kind of time measuring device, and you can't get away from that. Absolutely, your services are measured in time. Your salaries, my salary, whatever we do in life, is measured in time, and the more accurately we can measure the time, the more we are getting down to brass tacks. It is not a theory. We are forced to use a time measuring instrument, because our employees insisted when it came to the question of paying, on knowing what was the time consumed. I don't care whether you pay piece rate, day rate, or anything else, you have got to have the element of time. There is not a man living who can tell you that a yard of goods produces so much. What you buy is effort of a definite period of time. That is what you pay for. The reward is for the time spent, and the kind of effort. You can't get away from it, no matter what your system is.

That gets me down to the system. There was a misunderstanding about the eight pairs of shoes. A critical question was asked of a case that can not exist. It was asked in good faith, but the way that question was asked it could not be answered, because it depends upon the exact form of additional effort that you intend to pay for, bonus or scientific piece rates. A scientific piece rate has been adopted by our shop, which is a combination of bonus and piece rates, a differentiated piece rate, and I have studied every system that I could get my hands on in order to get methods adapted to our business, which is a complicated industry. I found many organizations employing four different ways of paying.

The essential thing about scientific management is this, giving a rate that is satisfactory to everyone concerned, so that you will have cooperation and additional effort, which is chiefly effort of the will, and with that cooperation you will have accomplishment, and that is what you are after. You should judge from the results, from what you accomplish, and a large reward should be given for accomplishment. That is the whole principle of the matter. It doesn't make any difference whether you pay it by bonus or what. The bonus, roughly speaking, in the layman's language—you can catch me up on some technicalities, because if I was going to explain it in all its details it would take me more than an hour to do so. But the idea simply is this, that we have determined, by taking into consideration the facts of actual improvement, what the best way to do a thing is, and have trained men to do it that way. Whenever he reaches that standard which a thoroughly well-trained man by methods that have been ascertained by stop-watch and other modes of investigation—when he has actually reached that standard means of performance which a man properly trained can reach all the time that he works and thrive on it, that is fixed as the standard. Those are Mr. Taylor's words, "Thrive under it." You understand, and when you do that, then he is entitled to some kind of reward.

The bonus system is one of the best systems going, although we do not use it any more. I will tell you why it is, because no matter what you and your workers ultimately aim at—our workers were aiming at some form of piecework, and we joined the method of the bonus system with piecework. A bonus is one of the fairest means ever devised in rewarding. For instance, here you start with a worker, who is getting $2 a day, we will assume. It does not make any difference how much he produces. One man said 8 pairs of shoes. You say you can turn out 10. We say if you can turn out 10 we will give you $2.50, or, say, $3, I don't care what bonus. And the reason that this thing has not been a great subject of bargaining is that it is always the attempt under scientific management where I have seen it to make it so large that it is beyond the expectation of the worker. When we first gave out our advanced rate and got our employees to say if it was satisfactory to them, they said it was more than satisfactory, and some said it was more than the job was worth. Perhaps so, but it was worth all that to us, and that is the idea of this bonus.

Now, you can easily argue—though that is aside from the fact and spirit of the thing—"Well, now, that man gets $2.50 for 10 pairs and only gets $2 for 9." You have, as a matter of fact, through your own efforts, through your own study, and through your own investigation, and your own tremendous expense of money as well as effort, found out a way by which you have increased his pay without adding one ounce of additional energy to him. In most cases you have reduced the energy applied. As a matter of fact, if you are going to get cold justice you are in most cases practically entitled to all of the difference. There is no inducement to advance if you don't get a share. Now, you see I am going to give the workman a liberal share in order to get from the worker a liberal cooperation. It is psychological, and it has the effect of producing good feeling, and that is the most valuable thing you can buy, if you get it in a fair way. That is scientific management, too.

That is the bonus system, and that is the way the confusion arose, because there is a technical difference between the bonus and different forms of premium in Mr. Thompson's mind, and he wanted to explain that to you. It doesn't make any difference what we pay, it is the question of how much more we are getting out of it.

I want to take up the story of our organization in our forces when the first suggestions came from our workers to use the watch. We spent years in making investigations of operations in the clothing industries. There are probably some 4,000 different operations on garments. I do not mean that we split our work up into that many operations, but I mean what is technically known as an operation. I will touch on the question of specializing right there. Wherever a worker capable of expert work is devoting half his time to work that can be done by some one less expert, it is a crime to keep him wasting his time on less expert work. When we made our scientific investigations, we had some 175 or 200 operations, and we still have them; but we subdivided many of them, and we also added many to units that would practically make a whole unit so that the worker could see the accomplishment of an idea, a single thing, and still exercise the class of skill he was best capable of. It was after years of working along that line that I happened incidentally to happen across one of Mr. Taylor's works, which led to a great personal friendship between us. No expert service has ever been employed in our plant, except a little technical advice by the management, and so on, but not to do the work in our plant, and it has been worked out by us with the assistance of everyone of our 800 workers.

I want to get back of this criticism of driving, of fast work. Let's not be mealy about it. The object we have is to get the worker to work at his highest capacity and thrive under it. Do not fool yourselves. You don't with your own work, and you yourselves don t do any less work, any less piecework than you can stand, and that is what Mr. Taylor said, Mr. Dunlap to the contrary notwithstanding. Mr. Taylor's statements were not fortunate before this committee at one time. Whether a man can stand up under the tests or not is a question of educational training. That is what we are giving them. That is what time study is doing. That is what the teacher does in the school. That is where it is copied from. They set a task to the child based on the time it will take, the same as you put a boy to chopping wood. You say, "Chop that wood." That is without management, and it won t be done in a hurry. But you say to him, "Now you chop this wood, this pile of wood, and when you get through you will get 50 cents and a chance to go swimming." You will then see the chips fly. That is what we say to our workers. We assign an hourly task, and beyond that for the group we set a task that is to be gotten out for the day, and then they can go home, and the average time of going home in our plant is at 2 to 3 o'clock. Our workers work about seven hours a day, not because of legislation, but because by the stop-watch we have shown them how to save time.

I am personally willing to pay the expenses of any committee to come and see the finest body of workers that you ever saw. The result achieved is the result of scientific management and stop-watch work. One of the girls came into our office and complained because she had not had a stop watch put on her for six months. The week before I came here I had two conferences within two days, one with a group of 9 and one with a group of 40 workers. The question was with regard to fixing something up with regard to their tasks. They asked if I wouldn t have the time-study man of the research department come out there and restudy some elements of their work. We want to talk turkey and that is the kind of turkey which we talked. Mr. Taylor said it was the best example of scientific management in the country, and our people will not talk on what is a fair task unless we show them stop-watch records as to results. I could show you fifty-odd letters of workers in our factory showing what they think in regard to our methods and some of the results achieved.

Mr. Emery. Would you care to have those letters turned over to you, Mr. Chairman?

The Acting Chairman. If they do not occupy too much space, we would like to have them in the record.

Mr. Feiss. You are perfectly welcome to them. They were gotten by our employment department. The woman in charge of the employment department makes a statement concerning them.

Mr. Sumners. I would just like to ask one question: How do you use the stop watch when you come in to examine a group?

Mr. Feiss. I will tell you how we use the stop watch. Mr. Smith said he would get nervous if a watch were put on him. Every human being is a little different from another. Some when you watch them become nervous. Now, we can't put people like that under observation, but we have had instances where we were very anxious to get records of people, and we have had them observe themselves and got perfectly good records that way. We use several methods. We use the regular stop watch, which has been devised by Mr. Thompson here, split into one one-hundredths of a minute, as it is easier to reckon by tenths and hundredths of a minute. We try to observe a good portion of the operators over a long period of time in order to get the whole story of time study. We make surveys and have developed a research department capable of using the time study, and we developed a method of taking time studies to cover the whole gamut of obstacles that come in any operation. Then we make an observation of the entire factory, working up over the factory, taking the more competent, not the most competent, the steady workers always. You know steadiness is the thing that you are after. The operator that does a whole lot one hour and in another hour doesn't do much is not the competent one. The steady one is the most competent operator, and working with them by means of our instructors—and our instructors are not superintendents. Our instructors are the most skilled people, who have not only skill plus the ability to teach others, but whose business is only to teach. They have no productive responsibility at all. These instructors work out the best methods, of course always getting ideas from anyone we can, from the worker, the foreman, or the superintendents, etc.

Now, we get a set of studies. Then we must work toward a standardization of that job. We must agree on a certain method of doing it, a certain tool to use, a certain speed to run that machine, certain features as to needle attachments, etc. All are standardized and are furnished to the worker, and it is only possible to standardize by seeing what effect it has on operating time. If you observe him all day and see that it tires him by the afternoon, you have got the wrong motion, or the wrong tool. We follow up by means of an automatic instrument that makes records of all their times.

Mr. Sumners. May I ask——

Mr. Feiss (interposing). I just want to finish that. After we have done that over a period of 10 months, after our final observation of the thing, we have a tremendous amount of available data which we cross index and check, because enormous elements in one are produced in another operation. But we don't use those for setting rates. Get that in the record. We use that to standardize conditions and to compile instructions in order that we can train our workmen. Then, after they have gone through a certain process of training we restudy the whole thing, covering the same and other points, and if they check up with former operations and we get similar results, from 18 months to 2 years afterwards, without going into technical detail, then we establish a basis for setting what the task shall be. The setting of a task and the rate are different things. The time study department has nothing to do with the rates. Our firm adds 25 per cent to what is agreed to as a reward for reaching a task. But that is an actual observation. It is a scientific study. All so-called time study is not scientific. All so-called chemistry is not scientific. I have had a long session with fakes in psychology, but psychology is a science, and so is management, and time study, and time measuring, and it is a science for which the workers will not only benefit, but which he will cry for once he knows what it is. It is the best science that has ever come into existence for the benefit of the workman. Most of the questions of lack of cooperation and dispute have been based upon arguments between workmen and employers as to what is a fair day's pay, what is a day's work, an hour's work, and Mr. Smith, to the contrary notwithstanding, very few workmen are able to tell what it is. Our experience was that the most skilled workmen had the least idea of what their real ability was and the employers have less. That is the truth.

Now, when you can get a scientist to make a record he doesn't make any guess. He records facts. Here is the performance of the workman, a performance that is done continuously all the time, that can be repeated by the same or similar workers.

Now, in the application of time study to rates, that is something that has an interest. Do you want to ask me another question?

Mr. Sumners. I was going to ask you this question, though I think you have answered it pretty clearly. I was going to ask you how much of the increased efficiency in your shop comes from the increase in the skill of the operator, and how much comes from the improvement of the tools and the conditions under which he works?

Mr. Feiss. I am going into detail right now.

I was explaining in reference to time studies what we do with time studies in fixing rates. It is a principle laid down by Mr. Taylor——

The ACTING CHAIRMAN. May I suggest this to the witness—I do it in the friendliest possible fashion—the committee is considering a bill which has to do with operations in Government workshops, and as to the regulations of those operations. Has the witness any knowledge as to how the so-called management is conducted in Government workshops? As the chair has understood this discussion, almost every gentleman who has testified has given his own idea as to just how scientific management should be applied, as to the various methods of enforcing scientific management. I do not think there is any dispute among the members of the committee, or among the friends or the opponents of the bill, about the desirability of standardizing or systematizing labor, or regulating workshops, and all that. But we are considering particularly the situation in Government shops, and personally I would like to get light on that subject.

Mr. FEISS. I will get right to that, Mr. Chairman, with illustrations from practical knowledge as to just how those things are. I wanted to explain something about time study, because I felt that the reason that time study was made the subject of this legislation was a misunderstanding of what time study is and how it is applied. It will take only a few minutes to finish that part of it.

The ACTING CHAIRMAN. Yes; this is but a suggestion.

Mr. FEISS. I may seem a little far afield, but I am coming right back. The idea in time study, as I want to explain, and as is understood in the Watertown Arsenal and other Government shops where applied, is not in taking this record of performance especially, which it is perfectly possible for workmen to reach, but it is a part of the science also of standardizing the amount to allow on this performance for fatigue and delays of different nature. Now, in the standardization for fatigue allowances and delay, I notice it was quoted that Mr. Hoxey reported that he found no study list. That is not true. Mr. Hoxey spent a great deal of time in our organization in looking over our fatigue studies and was surprised at the results, which showed that the individual, left to his own effort, under scientific management and time study, did not grow more tired as the day grew long, but his productivity increased without any incentive.

Now, this is an important fact, for in every organization for time study the amounts for allowances are made from actual past performances before any standard of performance is given to a workman, and those are not only liberal, but it is in practice in the engineering profession to allow not only things that are actually determined, and allow not only for fatigue according to the nature of the work, but also another factor, which I will call, for lack of a better name, a factor of safety, all of which is given credit, thrown in for the benefit of the worker.

Our workers—and I want to emphasize this—under this system have been working now a number of years, have been serving under this system, and they would be called high-speed workers.

The ACTING CHAIRMAN. The three bells indicates that there is a call of the House. As this committee is sitting without permission of the House, it will be necessary to go on the floor and answer to our names.

Mr. Feiss. I have about 10 minutes more.

The Acting Chairman. It will be all right if you can finish in time.

Mr. Nolan. Will you allow me a question here? I just want you to state to the committee how those letters were secured that you referred to, inasmuch as they are going into the record. I understand that you are going to submit them. If they are going to be put in, how were they secured?

Mr. Feiss. I was talking to our employment and service department superintendent, a young woman, about the question of time study and expressed the wish that we have some statements of some of our workers. She said she was going to ask them if they would not be interested in writing me and she did ask them to write some letters, about 10 or 20 young girls, how they liked the methods under which they were working, and if they liked the methods all right. Every one of them not only gleefully but with enthusiasm responded, and she obtained twice as many letters as she asked for, and she has attached a statement. She had them recopied, spelling and all. She has in her possession the original copies. Each letter is sworn to by a notary public as being a copy of the original on file and here is also her statement. I would like to include that with the letters.

The Acting Chairman. They will be inserted in the record at this point.

(The letters follow:)

March 28, 1916.

Mr. W. Herman Greul,
Eleventh and Twenty-sixth Avenue, New York, N. Y.

Dear Sir: Having heard from Mr. Feiss that a bill to abolish time study in connection with Government work is soon to be brought up in Congress, I wish to submit some letters which our employees have written in reference to this system in our factory. Not only was every letter inclosed written willingly, but the writer was enthusiastic about our present method of working and the substitution of accurate knowledge for guesswork. The letters are without exception written by people who have been in the employ of this firm a sufficient number of years to entitle them to a fair and competent opinion on the subject of time-study work, as they have worked under both the old system and the new. I was not only pleased but very much surprised to find that every person I asked responded eagerly to my suggestion that a letter be written expressing a frank opinion of time-study work. Every person who was asked to write a letter did so, and every letter is being forwarded to you. In some cases letters were voluntarily brought in to me without any suggestion on my part, with the request that I make use of them. I am confident that I could obtain numbers of such letters if you care for more proof of the opinion of our people on time-study work. You will notice that the style of some of the letters is very informal. This is accounted for by the fact that I told the writers to express themselves in any form they chose. Incidentally, I hope you will notice the command of no mean vocabulary in some of the letters. We are very proud of the intelligence of our people, and call attention to the fact that scientific management not only furnishes incentive but also gives them time to improve their minds.

If I may express a personal opinion on the effect of scientific management on the lives of workers, I would like to say that I think there is no comparison between the conditions in an establishment where time study has been scientifically made and intelligently applied and a place where slipshod methods prevail. Before entering this organization three years ago, I was for two years placement secretary in the Boston Trade School for Girls. My work in that capacity took me into a number of garment factories. The memory of the disputes and constant friction and the consequent nervousness and ill health which arose from haphazard methods are still fresh in my memory. I can not be too enthusiastic about the new method which means fairness and justice to all as well as shorter hours and better wages.

Our records of the health of our employees and our daily evidence of their happiness and well-being convince me that one who is familiar with the facts would not consider abolishing time study but would rather consider making it compulsory as a further means of protecting the worker against injustice and exploitation.

Very sincerely, yours,

MARY BARNETT GILSON,
Service Superintendent.

3458 EAST FIFTY-SECOND STREET.

Having the experience of working in a factory where they have time-study system, I would like to explain the difference between this system and the guesswork system.

I've worked in a place where they have guesswork, and it seems that a factory that make all the guesses do not have their employees work together, and can not get their daily task out as desired. There are more people on one operation than is necessary, and one operator may be turning out more work for less money, while another may be turning out less work for more money. At present I am working at the Joseph & Feiss Co., where the time-study system is of great value to both employees and employers. Each operation was timed by a little watch for hours and the price was set according to the operator's hourly average.

The factory is divided into sections. Each section has a production board, and a daily task is set for each operation, so when the group of girls come in the morning, they hurry along to reach their hourly standard, and in a few hours the amount is more than if the operators worked all day. We all work together, and the time-study system makes the factory run smoothly.

ANNA LID.

3817 CARLYLE AVENUE,
Cleveland, Ohio, March 27, 1916.

To whom it may concern:

Having worked at two places, at one two years, at the other nine years, under old management and long hours; but I am working at the Joseph & Feiss Co. three years in September, under scientific management, and to my knowledge is far better in working shorter hours because under that system the operators are kept busy every moment of the day.

It is the ambition of every operator to work herself up to a high-class operation. An inefficient operator is kept tract of every hour by the production foreman up to the time that he or she reaches her hourly task.

There are several factories they think that an operator can turn out more work than they do, which I do think is entirely wrong; therefore a time study is taken here to find out how much an operator can turn out per hour.

Then how many operators is needed on the operation to turn out their task per day? The class that I am working in, 35-28 class. The operator's hourly task is 33 per hour, which in earning is 36 cents per hour. This is the minimum of this class operation.

MATHILDE BECKMAN.

1866 WEST FORTY-EIGHTH STREET,
Cleveland, March 27, 1916.

DEAR SIR: I wish to say something in regard to our time system in our factory; this time system means we have a man who times the girls by the hour and he sees that each operation turns out their average each hour. I am fully satisfied with this system, as it is a good idea to get through with the work and gives us girls more leisure time to ourselves at home. I must say we have one of the finest-kept factories in the city; it is strictly sanitary; all visitors are welcome to come and see our factory; there is always a person to show them through and explain the work to them. We have all kinds of amusements for ourselves. I remain,

Most respectfully, yours,

NELLIE CARLIN.

4019 CLARK AVENUE,
Cleveland, Ohio, March 28, 1916.

I wish to say a few things about the Joseph & Feiss Co. I think the time study is a good thing—to know how much a girl can turn out in a certain time. A time-study man has made a fair study how much a girl can turn out every hour, which is more interesting then when people guess how much you can do. Every morning each section has a task to turn out, and after that is made then we can go home; and sometimes its early and sometimes its a little later, according to what the task is each day.

Then we have the different games—baseball, captain ball, and many other things. Every Tuesday we have dancing after lunch, and then Fridays after work we have dancing, which I think is very nice. We have a choral club here every Friday in which we have about 200 members singing, which is very nice. Then there are many other different things.

Yours, truly,

WILHELMINA KONDELKA.

CLEVELAND, OHIO,
4216 Whitman Avenue.

DEAR FRIEND: I received you letter; you seemed very anxious to know what position I hold now. Well, I work for the Joseph & Feiss Co. It is a very large tailoring concern. All operations in the factory are timed by a time watch. They can tell how many girls should be on an operation in order to get the work out. My operation is seaming linings. Our standard is 24 five-seamed sack coat facings or 15 overcoats facings an hour. When we get our task out we go home; this means shorter hours and better wages than in factories where they have no time study. We know just how many we are expected to make; we don't have to guess, like other people who do not use the time study.

Yours, truly,

MARGARET JONES.

3141 WEST FORTIETH STREET.

DEAR FRIEND: Have a few moments to spare; thought of writing to you about the place where I work. In the morning when we start to work we get a task of about 1,200 or 1,300, and then we hurry and finish the task so we can go home early. If we have no work, we tell the foreman and he signs our slip so we can go to the office and ask if they have anything for us to do, and if they haven't anything for us we can go home. At noon hour the girls play captain ball, and it so much fun to watch them play. But in summer it is still better, because we can go outside and play. Am working at Joseph & Feiss Co. five years and I think there's no better place to work. The ladies have a large dining room which is kept neat and clean. Have no more time to write, so will close. I remain

Your friend,

EDNA EIGNER.

3284 WEST FIFTIETH STREET.

DEAR EMMA: I thought you would like to know something about the factory where I am working. Every girl knows how much she can turn out every hour of the day, and this means different people are not guessing all the time what you can turn out. I think our factory is the best in the world, and we play baseball and captain ball every day.

LILLIAN MELDA.

3608 SACKETT AVENUE,
March 27, 1916.

To the JOSEPH & FEISS CO.: Have been working in the Joseph & Feiss Co. for five years and sure have seen its development in scientific management. For instance, the time study, which is taken by a stop watch showing how much work each individual can turn out every hour, allowing a portion of time for getting work and things needed. The price is then set accordingly. Also, when there is no work, we are sent to our recreation room for an hour or half hour, until work is ready. This time is then deducted from our slips at the end of the day, this showing only the hours that we had work. A few years ago we used to wait for our work at our machines, then at the end of the day mark eight or nine hours on our slips and only work five or six hours a day, never knowing how much work could be done, or what price was correct. This study sure is great help to us, showing us plain facts, and proven to be such; also placing our work in order most convenient for us and the operator to take the work from us. Folding our work a certain way, putting it in a certain place; these are things that are studied and found to be great help to the operator. Also each machine is numbered, so repair machinists waste no time looking for the same.

We also are given a task every day, thus keeping the department balanced. This task is set according to the work between operations. These are only a few of the many facts which have been proven to be wonderful in scientific management. And this place—it is grand to work in this factory.

MARIE FIALA.

4312 WOODBRIDGE AVENUE,
Cleveland, Ohio, March 28, 1916.

DEAR FRIENDS: Seeing that there is a study on time-study work, I will give you an example of my own experience. I am an employee of the Joseph & Feiss Co., a clothcraft shop. We have adopted the system of time-study work. It is a good system for every factory to have. Time-study work is a study of timing the operations to see how much time it takes to make it and how much work can be turned out per hour and the setting of tasks. In this way they know just how much work can be turned out a day throughout the whole factory. The time study is done by using a stop clock, which indicates how long it takes to handle the work and how much time it takes to do the work. That is the way our standards and tasks are set. If every factory had a system like this, they would turn more work out in less time and with more wages.

Yours, truly,

EMILY RADDATZ.

3510 TROWBRIDGE AVENUE,
Cleveland, Ohio, March 27, 1916.

To whom it may concern:

I have never worked in other factories; do not know much about them. Am working at the Joseph & Feiss Co. for seven years, and the system of management has improved from year to year; time we go home, from 2.30 to 4.30 in the afternoon, on account of scientific management, because the task is given to every production foreman first thing in the morning.

A time study is taken to find out how much an operator can turn out per hour. Then how many operators it takes to turn out a task of 1,800 per day.

It is the ambition of every operator to work herself to a higher-class operation.

The reason why I seem to be interested in this system is because we have these tasks set every morning, and the sooner we turn out the work the sooner we go home, which means shorter hours. We also have recreation among ourselves, which makes us feel quite jolly and gives us some ambition to work. We all try to cooperate with one another and try to average our standard production each hour. Each hourly production adds to our task, where, finally, we reach our daily task, and then we retire.

MARIE DOLESH.

4312 WOODBRIDGE AVENUE,
Cleveland, Ohio, March 28, 1916.

KIND FRIENDS: There is a system that is going on in the Joseph & Feiss Co. which is called the "the time study work." This system is to make the garment go through the whole factory in a very short time. Each garment is timed by a stop clock to see how long it takes to make it. There is a standard set throughout the whole factory to be done in such a length of time.

This standard is set by the time it takes to make one garment, thence to how many garments can be made in one hour. This system has been found to work with speed and also quality. If "time study work" was passed and worked throughout all the factories in this country there would be more work and less time wasted, and there would be shorter hours and higher wages.

Just a little experience from an employee of the Joseph & Feiss Co., of Cleveland, Ohio.

GERTRUDE RADDATZ.

4713 OAKLEY AVENUE.

I am employed at the Joseph Feiss Co. for 10 years and our system has improved 100 per cent. We have nine sections in the coat shop and four sections in the pants shop. We start at 7 o'clock in the morning and work till we reach our task of 1,500 or whatever the superintendent gives us. There are two girls on our operation and our hourly task is 110 per hour. We have time slips where the route clerk marks the batches we are supposed to do. When we get the batches finished we go up to the board where the route clerk is stationed and get our slips checked off. Each operation has a production board where they add the amount of our batches. Our batches are never more than 25 coats to the batch. In case there is not enough work for the two girls on our operations the girl that is finished with her batches first goes down stairs for a half hour and then when the other girl gets finished she goes down stairs. We have lunch at 11.30 and it lasts till 12.15. When we get finished with our lunch we go outside and enjoy the fresh air. When we get upstairs at 12.15 we feel like working on account of being refreshed. We usually finish our task at 4 and then we go home.

MARIE SCHUERGER.

3187 WEST FORTY-EIGHTH STREET.

Am working at the Joseph & Feiss Co. for six and one-half years, and the systems are improving every year. We start to work at 7 o'clock; the first whistle blows at 6.55; that means for us to go upstairs to get our button out of the cabinet; we go to the route clerk for our slips. We take our slips, go to the ledges, where our work is placed in numerical order; when the second whistle blows at 7 we are all ready for work. There are five girls to a group, and there are nine groups of girls on the operation of felling sleeves. One girl's hourly task is five and one-half coats per hour, and our daily task is about 1,400. Each operation has a production board on which they mark the amount of coats turned out per hour. The whistle blows at 11.30; we get in line according to our numbers and our section. We have three-fourths of an hour for lunch; the first whistle blows at 12.10; then we are at our places when the second whistle blows at 12.15. We usually reach our task at 3.30; then we can go home.

ANNA KINZEL.

3435 WEST FIFTY-EIGHTH STREET.

DEAR FRIEND: I am going to give you full information of the firm at which I am working for, called the Joseph & Feiss Co.

How they have changed their systems of work in department—shorter hours and better pay. They also have better service and good sanitary conditions to work in during the four years of service I have put in as an employee. Each of our departments have a certain amount of work to finish at a certain hour, which is called the task. The sooner we finish our task, which is good for our own benefit.

If the work is not in good order after it is passed through to the examiners they give it to the instructor, which he returns to the girls or to whom it belongs as repairs, and we then receive a red mark, which we all try to avoid. When we find any work that we think is not able to pass we have it repaired; then we receive a blue mark, which we get credit.

I am positive from my own experience that recreation makes an efficient operator.

We also have a longer noon hour than we used to have. After our lunch we have different kinds of amusements—baseball or captain ball; during our amusing ourselves we can relieve our minds from our work until our time is over, then we all start at our work as usual until we have finished our task.

Yours, truly,

BARBARA WOSOTHA.

1949 EAST ONE HUNDRED AND TWENTY-FIRST STREET.

If you are interested in visiting factories, see that you don't forget to visit the Joseph & Feiss Co., which is one of the best factories I have ever seen. I have worked for the Joseph & Feiss when I was 15 years old, during the summer school vacation, and the very first thing I have done was pulling bastings, which I liked well. Of course that was a low-price operation, and they have started me low.

I have improved in my work and was transferred in a 16-cent operation. Then I felt very happy and worked still harder until I made over my task. I am now in a 30-cent operation and do not work full hours yet. I will be 18 years old the 1st of July. My earnings are very good, and still I don't work eight hours every day, but I go home early and spent the rest of my day in doing pretty little work at home.

HELEN ANTONELLI.

3306 WEST THIRTY-THIRD STREET,
Cleveland, Ohio, March 28, 1916.

Being a employee of the Joseph & Feiss Co., I wish to write a few things about the place and its surroundings: that as long as I have been working there found it to be a clean and sanitary place to work, and that I am well satisfied with the new system we have at our factory at present: a good many people outside the factory do not quite understand about this system. I will explain a little of my experience. Every morning about 10 a. m. our foreman receives a slip from the office, and on it is written the tasks for each operation, so that every girl knows exactly how much work she has to turn out in order to go home. so in case we have an early shopping or any other work we would like to do early, all we have to do is work a little more steady and we have our task finished and have earned in a few hours what some girls in other factories earn in 9 and 10 hours; those girls have my sympathy. So that is really what this new system is—short hours and good wages—and I hope they will continue this system in the future.

Yours, truly,

HELEN UNGER.

5908 BEVERLY COURT.

I find this new system of hourly tasks and daily tasks a good system to work by. By having these daily tasks the girls are more ambitious. It makes them work faster, for they know that the sooner they get their task the sooner they can go home. Why work 9 or 10 hours a day when by this system you will only have to work 8?

I think if all the factories worked by this system they would find their employees more ambitious. We have the hourly tasks to standardize our earnings. I'm sure if the people were not satisfied, they wouldn't work by this system. Everyone I know speaks well of it.

FLORENCE KOCH.

12309 MAYFIELD ROAD,
Cleveland, Ohio, March 26, 1916.

Expressing my honest opinion of time-study working I find it most favorable for the workingman.

1. Time-study work requires skill in workmanship.
2. The required number of employees are placed in groups, so that the employees have the sufficient number of work as it is passed from group to group.
3. Time study is taken from every move that the employee makes, with an average of six minutes to an hour, for the time it takes him to take his work to an fro.
4. A standard is set for each group of employees according to their ability.

I have worked under time study for nearly two years and find it most favorable for the workingman. I remain,

Yours, respectfully,

NICHOLAS G. TRIVISONNO.

3279 WEST FIFTY-SECOND STREET,
March 22, 1916.

After working for the Joseph & Feiss Co. four years I think it one of the best-conducted plants in the country and for these reasons: It is about as sanitary as any place of employment can be. The health of employees is considered first than the amount of work to be produced. There is a system by which every employee upon arriving to the factory in the morning is informed how much work is expected of him or her. This task as it is called is supposed to last all day; however, if one doing the same line of work finish their task before another they put their shoulders together and help each other out in order to be through as near as possible to leave the factory together, there being no special time scheduled for quitting. The amount of time each operation requires is found out by a time-study man who times the operators and then piecework rates are set accordingly.

In case of illness a nurse is on hand at all times and two days out of the week a physician is present, and an eye specialist and dentist frequently inspect the conditions of the eyes and teeth of the employees. They also are provided with all lines of amusements, such as dancing, roller skating, captain ball, baseball, and hockey. There also is a library at their disposal and a choral club once a week during lunch hour. For these reasons no one could expect to work for a better firm than the Joseph & Feiss Co.

ALBINA JAROLIMEK.

4903 DETROIT AVENUE,
Cleveland, Ohio, March 23, 1916.

JOSEPH & FEISS CO.

DEAR SIR: In my opinion the time-study system is both beneficial and encouraging. The system means that each operation is required to turn out a certain amount of work a day. The operator must turn out so much each hour. It is to the girl's advantage to do as much as possible, as by so doing the operator may go home when her task is finished. If other factories would adopt this plan it would mean shorter hours and more time for recreation. I think it a good idea for the girls to go for their own work as the walking from and back to the machines gives them a little exercise.

I remain, respectfully, yours,

ELIZABETH MCKENNA.

2142 WEST FORTY-FIRST STREET.

System is what we have in the Joseph & Feiss Co. One of the most important points is time study, which is not done by guessing, but know for a positive fact; for instance, two or three girls on an operation, each girl turns out a certain amount of work every hour which we call an hourly task and all together makes the task which means the end of the day's work, in short hours, without any exertion. Wherever system exists is pleasure in work, which we have all the way around and should have everywhere else.

BLANCHE SAMSTAG.

GRESHAM, OHIO, *March 23, 1916.*

DEAR FRIEND: The time system of the Joseph & Feiss Co. is something worth while, as it is known just how much work each girl can turn out per hour, each operation being timed by an expert timekeeper, and enables Mr. Feiss to put the correct amount of girls required on each operation. Each day we have a task of from twelve to sixteen hundred, which we strive to get out as soon as possible in order to go home earlier, and it isn't hard to reach our task. I would much rather work under the new system which we have now than that which we had six years ago when I started to work. Then we had to work until 4.30, whether we had enough work or not.

CATHERINE VALLANCE.

3622 WEST FORTY-SIXTH STREET,
March 20, 1916.

The JOSEPH & FEISS CO.:

Having been asked my opinion on systematizing and time study, I will give you my opinion.

Time study is worked out in such a way that by the means of a stop watch it is possible to know how much work every operator is able to turn out every hour and still allow her a few minutes every hour for various things, and then the work is based accordingly so there are not too many operators on one operation and not enough on another, and then the task is set by this, so that it keeps the work going on through the factory at all times. Of course, where the operators are not efficient this is impossible.

By setting a task each day the operators know if they get their hourly average they can go home early and still have a fair day's pay earned, where if they knew they had to work a certain amount of hours they would not be so anxious to get their task, and would not be gaining by it, either; and then their time slips are devised in such a way that every operator knows each minute in the day how much she has earned and does not have to stop and figure after her day's work is done, gaining her a few more minutes each day.

IDA BAUER.

2071 WEST ONE HUNDRED AND FOURTH STREET,
March 28, 1916.

I want to tell you about the way we work in our factory. First comes a man with a time watch, and he timed us and see how many coats we can turn out by an hour. And we make 27 coats an hour, and I think it is better by a time watch, and like that because we get our work sooner done. As soon as we get our task, why, we go home earlier, and we rather work less hours and more payment than full hours. And we get out our task about 3 o'clock, or 3.30, and we make about $3 a day. I have worked here six years.

One batch right after another follows the numbers, so no one can be favorite. And we have dancing on Thursday, and we like the games real well. The place is clean, nice, everything. We have a library here, and a service department, and the foreman treats us nicely. We treat the new girls good, and a lot of times I showed the new girls, you know, where the wash room is and the playground.

Mary Hoeffler.

2300 Wade Avenue,
Cleveland, Ohio, March 22, 1916.

At the request of my employers I give herewith my opinion on time work against stipulated hours per working day.

While working under the old system of a stipulated number of working hours per day it created in me the tendency to waste time and work in a leisurely manner, there being no actual incentive to put forth my best efforts.

Under the time-study system recently installed, necessitating the turning out of a certain amount of work per day, I find myself bending every effort to the accomplishment of the task before me.

Time study enables the employer to determine the amount of work that each employee is capable of turning out. In each case the task is set at a point that can be reached by each worker with reasonable effort, and in no instance great enough to cause strain to the health of the worker. In fact, most workers go above their set task.

Under this system we have a definite point to strive for, and our interest in the work and its accomplishment has been aroused. The old manner of sliding along day after day is gone and in its stead there is an alert activity.

In conclusion, would state that it is my opinion and that of my fellow workers that we are more satisfied and better paid working under the time-study system.

Mary Huz.

5743 Portage Avenue,
Sixth City, March 20, 1916.

Working in a systematized factory affords an outlook of good wages and less hours. A place that has a system denotes the progressiveness of its employers. A time study which has been made in the factory is a method which determines accurately the amount each operator can turn out in a certain time. In a clean, wholesome factory, where the light and ventilation are good, the employers reasonable, and all the necessities provided for, the operator can accomplish just as much as if working longer hours and his average being guessed at. A task set for each operation keeps the work in balance day after day. It keeps the whole factory working almost every day of the four seasons, while at different factories they have no work for weeks. Every employee, or coworker, tries to reach the rate set for him, and by doing this not only achieves good for himself but helps in the cooperative movement in which we are now working.

Mary Zeleznik.

3326 West Fifty-Second Street.

Having worked at the Joseph & Feiss Co. seven years, I have found out for myself that the new system we have here in the factory is good. Each day we come to work we have our daily task, which means the amount of coats to be turned out for the day, and when that is finished we are allowed to go home. This means less hours' work, more wages, and more rest.

Each operation is divided into sections, and, each section having their own operation, this means that the work comes from the first section and passes through very smoothly.

The time-study man, who has timed each employee separately, and finding out for ourselves that this was no guesswork, for each person is timed with a watch and the watch does the work—it shows what each person can do within the hour, minute, and second, as I have been timed and was not at all nervous and was able to work steady while being timed. So now we have a standard set for each operation, which means the amount of coats that are to be made by the hour; and when each girl reaches her standard the task that is given for the day is turned out much sooner there, for it means less hours' work for the employees, more wages, and more rest.

Marie Hurly.

3414 West Sixty-Third Street,
Cleveland Ohio, March 22, 1916.

Dear Friend: I still work at Joseph & Feiss factory and am well satisfied. There have been many improvements since I have been working here.

When I first started to work here we all worked till the whistle blew, so that was more like daywork. But now we work till our task is out, no matter what time that is, and we don't all go home together; any time you finish your batch—that is, if your task is small, so then we go home. I suppose you won't quite understand what I mean by a task, so I'll tell you a little about it. Every section of the factory has a sort of blackboard, and there is where our foreman writes out our task and our hourly production. Then the route clerk is the one who checks our work. The first thing in the morning you have to go and get your slip from her, and your batch of work is written on already. You keep that up all day, then finish your work and go by her, and she will check it off until your task is out. So that is why I like it better now. Then, there has been many other things changed here. For instance, every girl must reach her standard, and that makes you work harder while you work, but you get through sooner than by the old system, and less hours.

We have more fun than we used to have.

Yours, truly,

Bertha Krakulik.

2110 East One Hundred and Twenty-fifth Street.

Time study is nothing more or less than a protection for both the employers and employees. The employers get their full amount of work turned out in due time, and the employed get paid for every minute's work that they produce for their employers.

Several men on each operation are timed, and then the standard is set for all to reach. I think it far side better to work on this basis than on daywork, because a section is given so much work to do. When they are done they can go home, where working at daywork they would have to wait for the clock to go around and reach the appointed hour, and not nearly so much happens to be accomplished as working this way. The thought of going home makes the employees work harder to get done so that they can go quicker. Going home early is another good thing, as the hard-working man can find something else worth while to do, at home or elsewhere, after his day's work is done.

Michael Di Cillo.

6122 Storer Avenue,
Cleveland, Ohio, March 22, 1916.

Dear Friend: I am writing to you about the factory I'm working in. I started about five years ago. At first I didn't like it, but now I do. They had a different system than now. We used to work from 7 o'clock in the morning till 5 or 6 o'clock at night. We had half an hour for dinner; now we have three-quarters of an hour and we have lots of time for fun. But let me tell you about the new system we've got. We had a timekeeper and he thought and planned everything so we could have it easier and better than what we've been having. He set our standard and price of making 32 to 40 cents an hour. They also timed how many coats we could make an hour. We got a task of, say, about 1,400 coats; if we finish about 2 or 3 o'clock we can go home. We also have foremen, instructors, inspectors, and route clerks. Route clerks are girls who give us work and check it to see if we have the right amount; if not, we have to count it over to make it right. I like it this way better because the girls can't pick out the best work; before we had this system everybody took what they wanted; now it is different. Inspectors are persons that look over the work to see that it's right; if not, we get it back and get a red mark which counts against us, but if we get a coat and we find something wrong with it we get a blue mark and get credit for it. Don't you think this is a good system? One thing I can say about our firm is that they treat everybody fair and square, and it is neat, clean, and sanitary. We also have a good time at dinner time; we play ball, dance, and play games. We also have a choral club of about 200 members and we are taught by Mr. Walter Logan. You ought to come and listen to us sing when we have a concert. I think I'll close my letter.

Your sincere friend,

Adelia Fleger.

3330 West Fifty-second Street,
Cleveland, Ohio, March 22.

Dear Friend. I am going to write to you about the shop I work in. I have been working in this place for over three years and I find that it is the neatest and cleanest place I ever worked in. We had two systems of work which I will tell you about.

Our old system consisted of nine or more working hours, and a half an hour for dinner, but our new system consists of less hours and we earn just as much or more money. In our new system our foreman sets a certain task and no matter when that task is finished we go home. Most always our task is 1,400 or 1,500 coats, and we finish by 1 or 2 o'clock; then we go home. We have three-quarters of an hour for dinner; during that time we play captain ball or different games, which I appreciate.

The repair coats are different. When I finish a batch of coats, the examiner examines them, and passes them to the next section. If any coat is not made right it is sent back and I get a red mark for it; that is counted for bad work, which everyone tries to avoid, but when I return a coat I get a blue mark and get credit for it.

Well, dear friend, that is about all I can write about the system, so I'll try to write more the next time.

Your sincere friend,

Louise Prucka.

3312 West Sixty-first Street.

Having 11 years of experience in this shop, I am fully convinced that scientific management is good, because under scientific management a hard day's work is turned out in less hours by getting a good start in the morning and working steadily.

In the past management one would come in the morning intending to turn out a good day's work, only to find you had no work to start, which was tied up by some other operation and which meant loss of time and money and longer hours.

Now, by having scientific management, the employees are divided into sections, the first section starting at the first operation and by having timed each employee and operation individually a certain amount of work, or task, is given each operation every morning, which balances with the others. So one gets a good start, and by working steadily turns the work out in less hours, makes more money, and gets more time for rest.

Under the study of time the timekeeper keeps a close tab on both employee and operation by staying at one's working place and timing you by the hour, minutes, and seconds; thereby the price on the operation is set accordingly. While before each employee would be timed by having the forelady guessing what one was worth by the hour and what price should be paid according to her own mind.

Timing an employee does not bother or hinder one in any way; you just go on working the same as when no one is watching you.

Mary Rosicka.

3322 Storer Avenue.

I have worked for the Joseph & Feiss Co. five years and during the time I have come to understand the new system which has been formed by the head principals enabling a better ambition to work. The firm is divided into sections and each section has its own operations. An hourly task is set for each operation. The completion of same means better wages and more time to rest for the day

Albie Mlckousky.

1729 Sadie Avenue.

Having worked in different factories has given me the opportunity to see the difference in managements, but have found that scientific management is far superior to them all, as things are explained and worked to plain facts and proven to be such.

For instance, the time study which is taken by a stop watch showing how much work can be turned out per hour by the operator, allowing a portion of the time to get thread and various things. The price is then set accordingly, thus showing that it is not only a piece rate but plain facts that every operator can turn out the amount of work required of them after the time study, where at many factories the price is not set according to the amount of work the operator can turn out, but at the smallest price the work can possibly be done for.

There are different rules that are plain facts which I've found are for the very best to the employees. For instance, having every operator construct their work one way that is most convenient for them and the operator who is next to take the work.

Another rule of this management which saves much time is when leaving the factory at noon every operator has his place in line and thus two by two leave instead of all crowding down at once.

These are only a few of the many facts that have proven to me that scientific management is far superior to any other management I've seen.

Anna Smith.

3642 West Forty-Sixth Street,
Cleveland, Ohio.

I am employed at the Joseph & Feiss Co. for many years and have lately found out how the piece-rate system is made.

Years ago the foreman or timekeeper would make a price on our work, never thinking of an hourly task, till finally they began a time study which has proven to be very good and plain to all employees. When they began the time study on my operation, I was sure that 27 coats an hour was too many; finally I timed myself hourly, which I really saw possible, and I am making it most every hour, finding the time study a very good idea.

Helen Augustine.

4208 Storer Avenue,
Cleveland, Ohio, March 21, 1916.

I am working for the Joseph & Feiss Co. I like to work in a factory where there is some system. I've worked in places where there is no system at all, and I think the girls have to work much harder than with a system. We have a certain amount for a task every day, and a certain amount every hour, according to the operation. When our task is finished we are allowed to go home. I think your work is more interesting when on piecework; you have a chance to make more money than when on daywork. And I think every girl tries to make as much as she can, because we all are working for money.

Respectfully, yours,

Anna Dache.

5617 Dolloff Road,
Cleveland, Ohio, March 22, 1916.

Having an opportunity of writing a few lines of our new standard system: First of all, the timekeeper times the employee and sees how many coats she can make an hour. After that he makes the standard how much she should make an hour. Every morning there is a task put on the board by the production foreman, which the girls are supposed to turn out. They can go home any part of the day when they reach that task. My idea is that it is a good system, for there is no misunderstanding and grouching between us girls. And also there is good exercise in it by going to the production board. We each get a slip by the route clerk; she writes the batch down of the coats which come in rotation and amounts to 20 or 25 in a batch. When I get through with a batch the route clerk checks them off. So by that we girls are treated alike. It is a very smart idea.

Rose Slaby.

5009 Guy Avenue,
Cleveland, Ohio, March 22, 1916.

Dear Friend: Just a few lines to let you know what I think about the Joseph & Feiss Co. Clothcraft Shop. In the first place it is clean, bright, and there is plenty of fresh air. Then I enjoy the choral club. I am not a member, but still I love to hear them sing. Also the working hours. I certainly appreciate them. It's just this way we all must be on time to begin work at 7 a. m. Then each section has a task of eleven to fourteen hundred coats a day. Now, that is divided between 5 or 10 employees. Then each employee does her best to get the amount out in about 6 or 7 hours. Now, each girl knows just how many coats she can turn out in one hour. When there is a change in the operation the time study man comes and brings a watch and times one or two girls. Then we know how many minutes it takes to seam one coat. My operation calls for 32 to 40 cents per hour. There is no guesswork, for each girl knows she can reach the amount. When I begin to work each morning I time myself by the hour, and I know I can reach to 38 cents per hour. I enjoy working here better than any other place, because I can earn good wages. The work here is like play, because the inspection foreman and production clerk are real nice to us all. I heartily appreciate all that the employers do for the employees of the Joseph & Feiss Co.

I remain,

ROSE KLINOVSKY.

2172 WEST FIFTY-EIGHTH STREET,
Cleveland, Ohio.

MY DEAR MISS GILSON: Having been asked to relate my experience while employed with the Joseph & Feiss Co., I take the opportunity of informing you that it has been a great pleasure to work with them.

In the nine years that I have been here many improvements have been made in the way of recreation, salary, luncheon room, etc. They all are bound to work out to the benefit of all concerned. All things are run so systematically. Each employee is required to turn out so much work each hour. This also tends toward economy in labor costs. Besides this, the employees are required to do their work in a neat way. The system of lighting is also excellent, whereby we can spare the strain that is required when cutting and sewing the material. In these days of high cost of living it is essential that one earn fair wages, which is possible at our place through efforts on our part.

In conclusion, would say that I have never worked at a place where such fair, unprejudiced treatment is given to all.

Very sincerely, yours,

ROSE STUNSTRA.

2499 WEST FORTIETH STREET,
Cleveland, Ohio, March 26, 1916.

DEAR MARY: Received your letter in which you asked me to inquire if there is an opportunity to secure employment with the Joseph & Feiss Co., and whether it is a good concern to work for. It certainly is a good concern to work for, and the employees are treated right. The work in this concern is divided into operations. My operation is overcasting back seams, and there are many different kinds of operations. All of the operations are set in different prices and classes. My operation is in the 20–25 cent class, which is the price set on this operation. My standard is 76 pairs of back seams per hour, which I reach very easily, and I very often exceed this standard. All our standards are set by time study. Our time shows the exact amount of operators needed on an operation to reach the standard. It is a great deal more interesting to see our standards set before us and can be easily reached with a little more effort than before we had our time study. One important thing we operators have noticed is that we are turning out more work in less time. Well, Mary, I will describe a little about our recreation. One great game we play is called "Captain Ball." This game is played both winter and summer. We have different teams scheduled each day. Then we have regular teams that play baseball, and, believe me, they certainly can play. We have a large dining room, with a large amount of tables. At each table there is a young lady selected to have charge of the new employed girls so they get acquainted. I think this is a very good idea. We also have a dance hall, and have dancing every Tuesday and Thursday, and another thing we have is our own orchestra. Every Friday from 11.45 to 12.30 we have choral club, which we are trying to make a great success. We have about 200 members. Last year we gave a very nice concert, and we are improving all the time as our club is continually growing larger. Well, Mary, I have tried to make it clear what a nice place this is, and as this is quite a long letter, I will close.

From your friend,

GLADYS COLES.

3623 HYDE AVENUE.

Why time study work is a good thing in the shop:

When I started working, some five or six years ago, I used to work from early in the morning, have short lunch hours, and work till late in the evening, and did it for some years. We now have a new system about the work which is very good.

Every operation has been timed and set to a certain standard every hour. Before this system was out we used to have again as many girls on our operation as we have now. We are set to make a certain amount a day with only half as many girls on the job, and we get through in about half the time, make more money than most people in other factories where they have to work full hours and work harder.

Our route system is something new also. We used to take our work just as it laid, but now everybody takes their work in rotation, which is given to them by their route clerk. I think it is satisfactory to every employee because the work is divided equally.

ROSE VLASATY.

3904 SMITH AVENUE.

Being an employee at the Joseph & Feiss Co., I wish to explain the way work is rated per day and the way prices are made. Our factory is divided into sections and the work passes through from one operation to another in numerical order. Tasks are set each morning, and each operation has their own task. When they turn out their amount the task calls for the girls are through with their daily work. They also have an hourly task; each person is supposed to turn out a certain amount of work per hour and make a certain rate per hour. In this way they can make out just how many hours you have to stay to turn out your task. The way this is done is as follows: They have a time-study man who times the girls while working, and just as she works he stays by her with his watch, which can be stopped any time, and this is done when she is not working, so he has the time correct while she's at work steady. Then he knows just how many minutes or seconds it takes her to do a certain piece of work, and by this he makes out what she can turn out in an hour, and then a certain rate is set per hour for every operation, and in this way they know just how much to pay each piece of work done. That is more proper than in any other place, because being timed in this way, a girl gets paid just for what she does, where other places you make work and turn out more work than what your wages usually average to; so I think a system as this one is regulated is the proper thing to have in a factory, because you get just what you really are worth. That's why I think the Joseph & Feiss is the proper place for all the girls to work. They try to have good wages, short hours, and healthy surroundings.

ELIZABETH FRIEDLE.

2633 EAST FIFTY-FIRST STREET,
Cleveland, Ohio, March 20, 1916.

DEAR MISS GILSON: In answer to your request, I am giving you my true opinion of the Joseph & Feiss system of work in the Clothcraft factory. Although I have only had two years of factory work experience, still I have seen and gone through quite a few of them. Also having come in contact with people of several years of factory experience, I have gathered that very few if any factories at all are conducted under the scientific management which exists at the Clothcraft factory.

In taking the time study the operator is not requested to work any faster or harder than usual, and the hourly task is set according to the average rate of the operator. So when the task is given for the day, the foreman in care of the section knows just how much each operator is capable of doing without straining or injuring their health in any way. In setting a task, there is encouragement to work, because if we did not know how much work to turn out for the day, the hours would seem so tiresome and monotonous that it would make us feel more tired than if we worked twice the amount of hours. In this way our work can not be held back, because the tasks of the different sections correspond with one another and the work passes through in order.

The route clerk makes it possible for the work to pass on in numerical order. The operators are given their work by the route clerk, so that the work is divided equally and one person can not get more or better work than another, as they would when taking it themselves. So we feel that we are being treated fair as the general system does not allow any partiality.

Just as the daily task is an incentive to faster work, so the different classes that the factory is divided into is an incentive to better work. So that being promoted to a higher class operation makes us feel that our ability and effort is known and appreciated.

SARAH LABGOLD.

3607 Sackett Avenue,
Cleveland, Ohio, March 23, 1916.

Dear Friend: Complying with your request, I will endeavor to express my personal opinion regarding the present system.

Formerly we had to report for work at 7 a. m. and left at 4.30 p. m., having three-quarters of an hour for lunch, making an average of 8¾ hours a day. We were then timed and the average amount of work we could accomplish in an hour was determined.

Now we report for work at 7 a. m. and are informed by the foreman what our task is for that day. Our task, as it is called, is the amount of work the employees on one operation are obliged to accomplish for the day.

Each employee goes to the route clerk in their department and gets a batch of work. After the batch is finished, it is placed on a table ready for the next operation. Then the employee goes to the route clerk again and reports the amount of work in the batch. If their figures compare, it is O. K.'d and another batch is given.

The present system appeals to me, as in getting our own work we benefit by the short walk and feel considerably rested. In addition to this we work steady all day and do not waste any time, thereby accomplishing as much as formerly and going home sooner.

I have been employed here for the last six and one-half years and am now working on the highest paid operation, which pays from 32 to 40 cents an hour. Every employee is supposed to make a minimum of 32 cents an hour, but may exceed 40 cents, if they can, on this operation.

Knowing that the other employees feel as I do about the present system, I am

Yours, truly,

Anna Sekot.

3538 West Forty-Sixth Street.

Just eight years in June when I put my application in for work at the Joseph & Feiss Co. Now I will tell you about the days that I have worked.

The first day I started was a happy day. Because when I worked among the girls who were so happy you could not help being happy also. So gradually from day to day the girls grew still happier. Now there are once more as many, and are working more in harmony than before. But before anyone enter the factory to work they have to see the service department first, to see whether they are in good condition to work. As we have the doctor come to his office twice a week which he has at the plant. We also have the dentist come to the plant. And any time we are sick and want to for an hour or so, we go to the sick room and lie down for awhile. Now that is the best service a factory can give to their people where there are so many employed as there are at the Joseph & Feiss Co. plant. Now the inside of the factory has just the same service.

The factory is divided into a certain amount of sections, and each section has a certain amount of operation, and each operation has so many girls working in order to keep the work going smoothly from the first to last section.

Now these operations are also all different classes. So when a girl makes good at her own operation she is promoted to a higher class operation where she can make more than before.

When these classes were given, they came from the rooting system which we have.

This rooting system consists of a certain amount of girls also. These girls all have a board in each section. So when each girl goes for work she has to go to this board and get her slip. On this slip is the number of the work which we have to take and work on it till the batch of work is done. Then we have to go to the board again so she can check the slip, and see if it is right. Then she gives another batch, and so on till the day is done.

This board was given by the time-study man which we had to time our piece-rate system. When this time-study man times the girls he would start in the morning before the girl would start to work in order to get all the hours in. He would start to time her just as soon as she would get her slip and sit down by her machine to work. And every time she would get up to get work and have her slip checked, he would allow a few minutes to that in order to give us time to sit down to work again. Then he would see how much work we could make in one hour and how much time we lost in getting our work. And so every girl is timed by this time watch and it is no make up or guess work by himself. Now then this is the way we girls get a task which we have to make. There is a task given in the office for every section, and the first thing in the morning the foreman of every section get this task to write on the board, so as the girls can see what is before them for the rest of the day.

Now this task is figured out from the girls, because they have to turn out this certain amount of work which was figured from them by the time-study man, and they certainly do get their task done because every girl gets together and makes up her mind to work, in order that she be done early, so we can go home early, which we can do. When our task is made everyone can go home, no matter what time it be. Now I don't think there is another factory which works under the conditions that the Joseph & Feiss plant does, and if they only would try this work by the hour as we have, I do not think they would want to work any different, because they would be making more money in shorter hours than in so many hours as some do.

Then it is not only work that we have to do at the Joseph & Feiss Co. We also have time to play. When it is time for dinner we all go down in line to the dining room. Now that is what you would call a dining room what we have. All the tables are covered with white goods, and serve their own lunches if the girls want any, having anything you wish to drink or eat. They also have a large washroom where the girls have many bowls for washing their hands; they also have nice large lockers where the girls put their clothes; each girl has her own locker; and they have a large recreation room. This room they make use of during the noon hour. They play baseball, captain ball, and all sorts of sport in the line of play. The days are divided. At every noon they have something different to play. They also have dancing at a certain noonday, and they dance one night after working hours one hour. They also have a choral club of about 250 people. That is on Friday noon, we have that rehearsal; the teacher comes then to instruct us for one hour; we have rehearsal just through the winter months; then sometimes we have a concert given by the choral club members.

Now this is the secret of the inside of the Joseph & Feiss Co. plant I have witnessed for the last eight years, and I do not think I could find another factory for some time to come like the Joseph & Feiss Co. plant is.

They give the best of service they can give; that's why any time anyone goes through the factory they can see that every girl has interest in her work, and smiles and sings while she goes along in her work all day long. So that continues from one day to the other, and so on.

DOROTHY FROEHLICH.

3424 WEST FIFTIETH STREET,
Cleveland, Ohio, March 24, 1916.

DEAR HATTIE: I am answering the questions you asked me the other day, in this letter. You were coming home from work when I was dressed in my best and seeking pleasure. One of your eager questions was "How is it that you are going away so early? Did you stay home from work, etc.?" No, my dear friend, I did neither of these things. I will explain to you in every detail how the Joseph & Feiss Co. has made it possible for every girl working for them to go home from 1.30 to 4.30 every day. You know that in most factories there are several different groups of girls working on different occupations to manufacture one article. In the tailoring business you follow the same rule in order to have the suit quickly and well done. My occupation is called "basting edges." Our daily task is from twelve to sixteen hundred. You will naturally ask me what a task is. In our factory we have a man who we call the time study man. This man times each girl on every operation and finds out how many coats she can turn out each hour, and sets the price for so much a hundred. When he finds this out he sets the hourly task accordingly. You may well ask me why I am so happy and contented of late. And why should I not be? First thing in the morning I find out from the route clerk what the task for the day is. When I find out I can tell you almost exactly how much I will make each hour (an amount you need not swagger about) and what time we will go home. We do not take the work to sew any old way the way you do in your factory, but we go to the route clerk, who has a board or desk in the middle of the section, and wait for her to give us the work in numerical order to avoid confusion. When the batch of coats assigned us is done we take the coats and place them in numerical order on a table and have that batch checked off by the route clerk and then she assigns us another batch, and so forth. By doing this we give our body different movements and exercise and are keeping our health. The old system is to sit from 7 in the morning to 5.30 in the evening feeding the machine like as if we were another piece of machinery. Just think, Hattie, of having to sit all day long grinding away and waiting for the clock to make its weary way round to 5.30. "Down with the old system, up with the new," says I. What do you say, old timer? The route clerk has pigeon holes in her desk for every operation in the section. There are cards also for every batch of coats which indicate how many coats in each. By these cards the route clerk knows how much work is in the section and how much each operation has to turn out, and how much they have turned. I'll say it's some system and so will you when you come down the first Friday of next month. You will also agree with me that the girls from the Joseph & Feiss are 100 per cent brighter looking and happier than in any other factory in Ohio or any other State. Hoping to hear from you soon, I remain,

Your sincere chum,

FRANCES SMUTNA.

7407 ELTON AVENUE.

DEAR EDNA: Do you remember the plans we used to make when we were going to school—how we decided what we were going to be and do? I think there are quite a few of us who have not realized our dreams. Of one thing I am sure, I never dreamed then that I would work in a factory. Work of this kind never appealed to me, but circumstances often will force you to do things which are distasteful to you. But I can truthfully say that I am not at all sorry I did it. When I say I am working in a factory no doubt you picture to yourself a sweatshop of which you hear and read about so much, but permit me to enlighten you.

The factory in which I work in is one of the cleanest and best ventilated in the United States.

I am going to tell you about the system under which we are working and which was adopted only a short time ago. Each operation was timed by a man with a stop watch, an instrument which estimates how much an efficient operator is capable of turning out in an hour. Then the prices were adjusted accordingly.

I must say, and I am speaking in behalf of a lot of other employees, that this system did not meet with approval right away. It certainly discouraged me in the beginning.

Can you imagine anyone working years on an operation, turning out a certain number and thinking they are doing fine, and then have some one come along and tell them they can turn out 20 to 30 more an hour? Quite a few of us, I am sure, thought it was impossible, but only a short time was required to show that it was not only possible, but not very hard.

You see, by this system they are capable of knowing what each operator can turn out, how many operators are required on each operation, and in how many hours a days' work can be done.

I believe that it puts ambition into the people. Now, they come to work in the morning, are given a task which is to be done in a given time, they set to work and turn out the same amount of work in less time, and earn the same amount of money. I, for one, am glad the system was adopted, for I am profiting by it. I shall expect you to write me about your work in the office as stenographer to see whether your position is to be envied. I know your handwriting is compared with mine. Hoping this letter will reach you in the best of health,

I remain, yours, sincerely,

HERMINE STENZEL.

3555 WEST SIXTY-FIRST STREET,
Cleveland, Ohio, March 25, 1916.

DEAR MARION: Have you ever visited a clothing factory and seen through how many hands and operations a piece of cloth goes through before it becomes a garment? I will try and give you an idea of how things are done at the factory where I work. Our factory is divided into several sections and in each section there are a number of operations. Lately a system was adopted which does not give us a regular quitting time, but instead there is a board in every section upon which the foreman writes every morning the "daily task" or the amount of garments that must be turned out that day. This board consists of a slate for each operation and every slate is divided into spaces representing each hour of the day, on which is written the "hourly task" for that operation. But at the end of every hour is written the "hourly production," or the amount turned out by the operation for that hour. If the girls keep up to this task they know just when they may go home, if they are behind it they must work until they reach it (their task). Naturally every girl will strive to work her best for the quicker she reaches her task the earlier she may go home. The result is shorter hours, more work, which means better wages and a quicker promotion to a better operation. While in the old way some girls would not try their level best and perhaps just thought that when the whistle blew they'd go home and to-morrow if they felt like they'd work, if not they just wouldn't, and in this way often did not turn out sufficient work to keep the girls on the (gr) next operation busy for the work is passed in rotation from one operation to the next. The hourly task for each operation is obtained by having the girls timed with a productograph. This productograph contains a clock and every time a pair is finished the exact time it took to make it is stamped on a sheet of paper. We also have clocks where every operator may see them. This helps the girls to see for themselves whether they are keeping up to their task each hour. When they see they fail one hour, it inspires them to make it up before the next hour is over. Every time a mistake is found it is taken back to the operator who made it and a red mark is put on her slip, which counts against her, while a blue mark is given to the one who found it and gives her credit. In this way good work is assured. We have a yard in the back of our factory where we can have all the recreation we want during noon hours. We also have a recreation room where we enjoy ourselves on cold and rainy days. We also have a library and a choral club. Everything is kept in the most clean and sanitary conditions which is a big factor to the promotion of health. During the winter months each section holds a party where we all have great times. Having told you all I can think of at the present I remain—

Sincerely yours,

Olga Jigelbrier.

Mr. Feiss. I was going to say that Mr. John P. Frye, of Cincinnati, who was on the committee with Mr. Hoxey, appointed by the Industrial Relations Commission, met me in Cincinnati last week and he showed me some records that he had taken in a town in which he showed that a great many men exceeded the tasks readily, although some did not, or possibly were not fitted for the type of work they were assigned to.

I want to mention in conclusion just a few pertinent facts and show their application. The first is that time study does increase the productivity of the worker, not only as has been explained here, by the standardization of the working conditions, simplification of tools, putting in the best methods of routing of the work, so that there is a steady supply of work, but it has gone to such an extreme in our business that we work every day in the year, in a business notable for its seasonableness, and this increase of actual and apparent speed of the worker is by eliminating waste of men and wasfe of time. The greatest elimination by time study is waste of men, and waste of time, in most instances the conscious and unconscious waste of time; that is, simply doing inefficient things, things that have no relation at all to the work. These have been eliminated by time study and the actual amount of physical effort of the worker is not increased but a shorter working day is the result. We used to work 54 hours a week. This was in 1910. Now the number of workers that we had in our factory in 1910 was 1,044. I want to give you some figures that I have here to show you what scientific management does. At first the number of new hands employed that dropped out was about 570, or 150.3 per cent, and that is a good normal. The normal is probably higher in the clothing industry.

Mr. Browne. Do you pay your hands now about the same as you paid under the nine hours?

Mr. Feiss. I am just coming to that. In 1914—I am sorry I did not bring the 1915 figures with me—we had 865 workers, 291 new hands, or 33.5 per cent labor turnover. Less people dropped out, considerably less during that time. The table here shows our working hours, which used to be 54 hours a week from whistle to whistle. We have a starting whistle but not a stopping whistle now, and when a worker gets through and she is not assigned to another task, she will be given instructions, paid for it, to learn some new work. As a consequence over 75 per cent of our workers know from 2 to 10 or more different jobs.

The ACTING CHAIRMAN. No such system is in vogue in any of the Government systems that you know of?

Mr. FEISS. It is contemplated at the Watertown Arsenal, and I think a certain amount of it is being done.

The ACTING CHAIRMAN. At the present time at the Watertown Arsenal there is no Taylor system.

Mr. FEISS. It is being installed.

The ACTING CHAIRMAN. I know, but Congress forbade the use of it at the last session.

Mr. FEISS. I beg to differ with the chair. As I understand it, they forbade a certain appropriation being used for time-study work, but I think out of another appropriation bonuses are paid.

The ACTING CHAIRMAN. You mean that Gen. Crozier has been evading the will of Congress in this particular?

Mr. FEISS. I do not know about that.

The ACTING CHAIRMAN. Well, we will ask those questions when he comes.

Mr. FEISS. I can not answer for him.

The working hours have come down to an average of about 43 hours a week and they are much more regular. We work every day in the year except once a year we shut down for a vacation for everybody. In that time our productivity has gone up 43 per cent and our wages have gone up an average of 40 per cent. That is actual income. Our early rates have gone up.

The ACTING CHAIRMAN. Are those your total wages or wages for each individual?

Mr. FEISS. Each individual added together.

The ACTING CHAIRMAN. And has the number of individuals employed increased or decreased?

Mr. FEISS. The number has decreased.

The ACTING CHAIRMAN. So that the smaller number of workers draw double the salaries?

Mr. FEISS. Yes, our costs have approximately gone down 8 or 10 per cent. The chief object was to secure a bigger dividend for the worker without burdening the business. The point I am getting at is that none of these things is possible without the stop watch, that the stop watch is necessary not only to subdivide the work, but in order to give to the worker that which he himself demands—that is, opportunity. He has no opportunity without training. The man without ability to get certain kinds of knowledge or education, so to speak, must have opportunity brought before him.

Scientific management in the first place and the stop-watch and similar methods determine what is his actual skill and the effort required—means a more skillful job than the other. It has made thousands and thousands of men satisfied with their jobs by giving laborers expert jobs. It has made the management responsible by giving each and every one the training that will best fit him for the job, and when that training plus the cooperation of the worker can not make him fit for the job it eliminates him from the job and seeks another job for him. In our organization for inefficiency we discharge and are forced to lay off less than six people a year, and then we find jobs for them at different kinds of work. But we are forced to transfer from one place to another a large percentage of our new employees. We find they do not fit in, and should not be permitted as they would in the old system when there was no determination of their exact fitness in the job they were originally hired for, but fit in other places in our organization.

I have in mind one instance where it took one and a half years to find a place for a girl. She is earning 25 cents an hour now.

That has application to the Government arsenals and other workshops. They are working for me the same as my shop. We want the shops to be as efficient as possible. It is only the keynote to what we stand for in American life—better efficiency, better service to yourself and to your country and to your community at large. We want our Government workshops to represent them. We do not want them to condemn those means which make for efficiency and which stand alongside as an inspiration to the private worker.

The ACTING CHAIRMAN. Let me ask you this: If you had a superintendent in your employ to whom you had issued quite definite instructions as to the conduct of the workers, you being the head of the institution, and you had directed him to do the work in a certain way, and he sought to evade those instructions, would you be disposed to discipline the superintendent for violating your orders?

Mr. FEISS. Yes; absolutely.

The ACTING CHAIRMAN. If the Congress of the United States should issue instructions that the Taylor system was not to be used in the workshops, you feel that Government officials would be bound to obey those instructions?

Mr. FEISS. I would think so.

The ACTING CHAIRMAN. And even though Congress was wrong, it would have the right to enforce those instructions?

Mr. FEISS. Yes.

The ACTING CHAIRMAN. Are all the concerns in your line of business using this system?

Mr. FEISS. No.

The ACTING CHAIRMAN. Do you know of any successful concerns in your line which are not using it?

Mr. FEISS. Yes.

The ACTING CHAIRMAN. You know among your competitors concerns that have not adopted this system?

Mr. FEISS. And among our important competitors there are none so succsesful as we are, and none that are giving the community so much value for so little money, and there is no concern in the United States—and I take this from reports, from information shown to me by the Labor Bureau in their investigations—there is no concern in the United States that gives its workers such short hours, such steady hours, and such high pay.

The ACTING CHAIRMAN. Do you know of any other concern in your business that is using the system?

Mr. FEISS. No, sir; our business, the clothing business, as a whole, is very backward.

The ACTING CHAIRMAN. As a consequence there is no other concern that you know of that we could make comparisons with as to the results in your shops and others?

Mr. Feiss. No; no other industry.

The Acting Chairman. These other business men who are competing with you have had an opportunity to adopt this system?

Mr. Feiss. Yes.

The Acting Chairman. They have been confronted with your splendid and highly successful example for some time?

Mr. Feiss. Yes; our shops are always open to anyone.

The Acting Chairman. They have not seen fit to adopt your ideas?

Mr. Feiss. They are adopting some of the ideas. The trouble with most of the men at the top is that they are not practical men.

The Acting Chairman. They think they are practical men.

Mr. Feiss. I think they will admit that they are not.

The Acting Chairman. But, anyhow, whatever may be your opinion of your competitors, there are many concerns that have not adopted it, although they have had this example before them?

Mr. Feiss. Yes.

Mr. Emery. I understand that you have made arrangements to hear Gen. Crozier. We have one more witness.

The Acting Chairman. It will be impossible for me to be here this afternoon. I would like to have your other witness put on so as to have his testimony appear in the record.

Mr. Feiss. May I put one statement in the record this afternoon?

The Acting Chairman. So long as you don't make it too long.

(Thereupon, at 12.30 p. m., the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee reconvened pursuant to the taking of the recess.

STATEMENT OF MR. RICHARD A. FEISS—Concluded.

Mr. Feiss. I think I was explaining the value of time study at the time of adjournment, and was answering a question of Mr. Keating's, who was inquiring as to whether other manufacturers in the industry, other competitors, had adopted the system. I told him they had not. I told him they were becoming awake to the fact of its benefits and had adopted several methods, and it looked as though they were going to adopt the system; but of course it takes a long time in a conservative industry for people to change. But we have the tendency on the part of managers as well as workers and others who do not wish to assume the tremendous additional responsibility which scientific management makes the management assume to-day and lead in the work which he expected from the worker before and which he alone is capable of and should be responsible for performing.

I touched upon the effects of time study and task work in our factory and I think it is merely an example. I have also been asked by Mr. Keating the interest we have concerning our interests as private manufacturers in the Government work. He admitted, as I understood him, the benefits of the system rightly applied in private establishments. It seems to me that if the responsibility comes to me to assume the best type of management known to the worker in my factory, that I must assume the same attitude to the workers in my factory; whether it is my own or my factory that the Government is running, it is my factory. I am just as much interested, and I am more interested from a public-spirited point of view in a Government factory than mine, because that stands and is supposed to stand as a symbol of correct progress for all manufacturers.

It seems to me, in conclusion, that much ought to be said about scientific management in general and the bill in question. We all have been led to understand that one of the motives of this bill is in the nature of a punitive measure from the point of view that certain things have not been properly conducted in the relation of the management to the workers in some of our Government work. Now, that may or may not be true, but let us assume that it is true. Because a man may have misused an instrument of science that is for the general good of the public at large and the workers in particular, should we abolish it in any particular place because some man or set of men have seen fit to misuse it or misuse the workers under such a scheme or in any other way? It seems to me to be a moral wrong and that this committee and this Government nor we have any right to attack a wrong from that point of view, because, as I have stated before, a chemical compound may be misused. A chemical compound that may be fine, of an improved condition and style, may be misused as a poison, but that is no reason why we should abolish its use in chemistry in general.

Mr. **Browne**. Right on that point: If experience showed that in a majority of the factories or industries where this Taylor system was used they abused the system, then what would you say about it?

Mr. **Feiss**. Then I say that we should, if legislation can do it, legislate and try to safeguard against abuses, but not abolish the system or its essentials if it has one iota of good in it. We must conserve the good, and, as I said, it is one of the functions of government to conserve the good, and we must eliminate the bad practices and eliminate the bad use, but not eliminate the entire system or even the entire use because its application has been bad in any particular set of circumstances.

Mr. **Browne**. I would like to ask another question.

Mr. **Feiss**. Certainly.

Mr. **Browne**. How long did it take to install this system in your factory?

Mr. **Feiss**. Scientific management, as I understand it, is a development; it is a slow, long development. To get to the stage where we are now I should say it has taken about five or six years. There is no such thing, you know, as hurrying in scientific management. If a man comes to you and says he has got a system that will revolutionize work overnight you can set him down as a faker and that there is no merit about it. Scientific management is common sense; it is common sense modified, and it has to go ahead on accurate knowledge instead of on opinion.

Mr. **Browne**. Was there any objection on the part of the worker in your factory to adopting this when you started its inauguration?

Mr. **Feiss**. In no move was there any objection, but as soon as a certain stage had been completed in part of the factory (and you know you can not do things all in a bunch; you have to develop gradually) there have been insistent demands that it be installed in other parts of the factory. And, as I explained this morning, we do not have wage disputes any more, but we have, time and time again, workers come to us singly and in bodies (some examples of which I cited to you and which we are pleased to have them do) about some particular proposition, and we investigate it with a time study so that we can get together about it and make an adjustment.

Mr. Browne. Another thing, did you have to weed out many employees because they did not come up to your standard of efficiency?

Mr. Feiss. I gave the figures this morning, that about the time we started to learn the science of management, which was in 1910, on the pay roll there were 1,044 employees. We hired 1,570 new hands, or 150.3 per cent of the pay roll in that year. In 1914, which are the last figures I happened to have with me, on a pay roll of 865 people we hired 291, or 33.5 per cent, which is a very remarkable turnover, and there is no such turnover in any similar industry in the United States. In other words, we conserved industry, by means of scientific investigation and time study, to dozens and hundreds of people who would have been strapped under the old system, because the demands would have been made upon them which they would have been unable to fulfill and accomplish. We have heard that claim, but from information I am willing to say that there are not over six people in any one year at the present time laid off because they can not be used in our organization. And there are hundreds of the newer workers who are transferred from operation to operation and job to job to find a place for which they are fitted, and in that kind of transfer and that kind of study of the fitness of the job to the man and the man to the job we must use the stop watch or other time-measuring devices.

Is there any other question?

Mr. Browne. That did not prove, then, a survival of the fittest, as far as we understand, in your factory?

Mr. Feiss. As far as explained by Mr. London, he meant exactly what Mr. Taylor meant when he said you would get a body of picked men. We have a body of picked operators and we made them picked. Time study enabled us to lay down the task time and the best way to accomplish the job and to teach it; and we taught people who never had an opportunity under the old system how to become skilled workers who, under the old method, never would have been given a chance at that work, and the earning of such wages would have been impossible by them under any other kind of organization. That is what we have done; and we have to have instructors just as we have to have machine experts.

Mr. Browne. Did you keep track of the injuries? Do you have many injuries in your institution?

Mr. Feiss. Unfortunately, I have no accurate record. We used to have a tremendous number of minor injuries—infected fingers, and so on. But I am only quoting from personal contact knowledge to say we used to have infected fingers, or hurt fingers, not less than two or three a day, and we now do not average that many a week. And you know there is a State industrial commission, and we carry insurance with the State in our State.

Mr. Emery. That is Ohio?

Mr. FEISS. That is Ohio; yes. I was speaking to them about the rate, and they said to us if the injuries, if the care of the worker and his job were as they were in our factory, they would have to materially lower their rates, and that the rate we paid was unjust; but the old-style factories made the rate higher than we, individually, were entitled to. Of course, our own rate in our factory has been lowered, and I know it is the lowest in the industry. And our record as to the number of absentees will probably bear on that proposition. We have a very remarkable record, I think, in this respect. I have some illustrations here which I will just quote on this. The record of absentees for the first six months of 1915 shows that the excusable absences average a little over seven persons a day, or nine-tenths of 1 per cent of the working force; and the unexcusable absentees averaged a little less than four a day, or five-tenths per cent of the working force; making the total absentees for the first six months of 1915 only 1.4 per cent of the working force.

That, of course, would be impossible if scientific management did not reduce the number of accidents and did not materially improve the health of the worker. The health of the worker in our factory has been held up as a model by the health authorities at home as being far above the average in that respect, and the long length of service is further proof of that. Remember, about 80 per cent of our force is women, and our factory organization is comparatively new—this factory plan is only 9 or 10 years old—and still over 35 per cent of our workers, men and women, have been in our continuous employ for five years. And about half that many, about 15 per cent, have been in our employ for 10 years or more, although we are only about 12 years old, and then only on a small scale.

In conclusion, I wish to say, and to emphasize the point, that this bill vitally affects the private organizations. We are interested in the work of our employees, whether they are in our own private factories or public-controlled factories. Whatever is best for the one is best for the other. This aims at the heart of the thing, and the method of accomplishing the purported end of this bill does not seem to be either right or just. If we are after an evil, let us aim directly at that evil. As I stated this morning, if a man uses a hammer to beat out the brains of his wife, shall we say that a carpenter shall never use a hammer, or shall we say that the hammer is bad in itself? Shall we condemn any appliance because of its misuse? This would be a blow at scientific management—the first form of management for directly bringing the worker's work on a higher plane which takes into consideration at all a distribution of the proceeds.

I want to stop for just one word there. This is one of the points I did not cover, that my study shows better methods of training, it shows better methods of operation. It does not speed up the motion of the worker. Not one-tenth of 1 per cent is gained by that speed, and that is not taken into consideration. That only comes from the additional chance of cooperation the worker has and better training; but in taking a time study he is not required to do that. It is all based upon the management taking upon itself the responsibility and improving the job so that the output can be improved by better conditions, by better tools, and by better flow of the work; at the same time undertaking, in connection with the work, to include the instruction and training of the workman so that the barely mediocre workman, under haphazard conditions, now under these conditions becomes a better worker entirely under better conditions of management, and the only thing required from the worker is cooperation added to the work; and for that scientific management demands that either in the form of bonuses, premiums, or differential or other piece rate, that in order to get his good will and stimulate his interest (and scientific management says you must get that or you are not scientific) that you give him a share of the gain, although the effort is practically all on the part of the management. And that gain, under all cases of scientific management that I know of, and I have investigated not only the 35 shops that the commission investigated, but I believe easily as many more, has been made so large as to put it beyond the realm of dispute, and beyond the expectation of the workers. Now, as I say, the work of the organized and the unorganized labor and the public at large has demanded cooperation on the part of the management. Now, the management says: "All right; we will assume our fair share of the work, we will assume our share of the management; we will be a help—not a boss, but a leader—we will be the leader to the worker, we will be his teacher; we will spell opportunity for him where there was no opportunity for him before; we will make the ditch digger a mechanic, and will make the expert mechanic a foreman."

Ten per cent of our working force to-day is engaged in indirect labor supervision, teaching, routing, and so on. Every one of them, from the superintendent down to the office clerks, and so on, in this work, has come from the workshop. That is the only kind you can use under scientific management. That is what scientific management has made. And it has replaced guesswork on the points of most vital dispute and futile effort at reconcilation. It has replaced guesswork on those points and put accurate knowledge not only in the hands of the management but at the disposal of the worker and the public as a means for further cooperation. And this bill is attacking one of its most important and vital means, in aiming to do away with time study in Government work. As to the bonuses, it merely is an attempt to destroy what the management has been asked to do generally, when it is through a time study and scientific research to enable them to deal with it rightly, to improve the work and the opportunity of the worker, and it wishes to take away his dividends.

That is all.

Mr. DENISON. May I ask you a question? Do you recognize any difference at all between private employment and Government employment?

Mr. FEISS. Do I recognize any difference—I do not know that I get just what you mean.

Mr. DENISON. Do you recognize any difference in the relationship between employer and employee where they are employees of the Government and employees of private business concerns, with the clock?

Mr. FEISS. In relationship?

Mr. DENISON. Any difference?

Mr. Feiss. Any difference in relationship? Not in this respect; I think it should be as near that personal cooperation as it is possible to be.

Mr. Denison. I think that is true. But now in public work, generally speaking, the employee is under civil-service regulations.

Mr. Feiss. Yes.

Mr. Denison. Do you approve of civil service?

Mr. Feiss. I approve of civil service in one respect. I approve of the idea of it. My opinion is that civil service is wrong in this way—what I mean to say is what it aims at is all right, but its trouble is that it requires an educative test, instead of a test for intelligence and character, two entirely different things. The principle, however, of basing it on some native ability is correct, and not leaving it to the will or whim of some official.

Mr. Denison. Really, if we are going to require a test, the educative test is the only one that is practicable, is it not, for the Government?

Mr. Feiss. The educative test?

Mr. Denison. Yes.

Mr. Feiss. No. You know there are certain educational tests that are devised to bring out native intelligence, which are very good; but I think character and native ability of the man ought to be considered, there can be proper consideration.

Mr. Denison. Assuming that it is here and going to stay, do you think the fact that the Government employees are under civil service, where they can not be discharged or let out except for causes mentioned in the law—do you think that would make any difference in the application of an efficiency system or scientific management system you have been discussing?

Mr. Feiss. I think not; not the slightest. I think not, because we are working with practically the same idea. When we once hire an employee, we consider, and in fact he must regard the appointment as permanent; and in the service department the fact that he drop out of the organization is considered a real loss. The biggest asset you have is your workman; he is your biggest investment.

Mr. Denison. Yes. But under a scientific-management system, if a man does not come up to certain requirements, he is eliminated, is he not?

Mr. Feiss. I explained that in your absence this morning. There is a lot of misunderstanding. He is eliminated from the particular work; but there is no shop where they do not have hundreds of different kinds of work; and I say "hundreds" advisedly. I mentioned this morning when you were absent, quoting conservatively from memory, that we have 4,500 or more different operations, of course combined in groups.

Mr. Denison. That is a rather complex business.

Mr. Feiss. I know a machine shop in the country which we studied that have 46,000.

Mr. Denison. Would that same thing hold true in a concern of less proportions?

Mr. Feiss. Oh, yes.

Mr. Denison. Where there is not a diversified class of labor?

Mr. FEISS. Oh, yes. You want to understand this, that that is one of the fine things about scientific management; that nine-tenths of the men who would be judged incapable under the old method are proved to be capable by training under scientific management. It must find men; that is the point. We are eliminating less and less, and we are finding better and better from time-study and research how to train men. Men are pretty near alike in their average ability, and it crops out as generally supplied by the different opportunities. A boy with a father who is a good carpenter and interests himself in him, seems to have an ability for the bench. He would make, probably, just as good a machinist. I want you to understand there are 800 workers, highly skilled and producing per capita, with less time and less effort, more than any other similar set of workers in the country, and hardly one of them ever saw or did that sort of work before they entered our factory. We do not use them for their knowledge when they come in at all.

Mr. DENISON. Do I understand you to say, then, that the application of the scientific system or the method about which you are speaking does not result in eliminating the poorer workmen?

Mr. FEISS. No; not in that sense. It makes them better and finds out the particular kind of work for which they are suited and which is congenial to them.

Mr. DENISON. Suppose a different class of work for which he is suited does not draw as much pay as the other; do you think that is better for the man?

Mr. FEISS. I will have to answer that in a practical way, from what is the actual case.

Mr. DENISON. Explain what you mean by "better for the men."

Mr. FEISS. I will do that with an example, as I think it will be clearer, if you will pardon me. Jones comes into the factory. We will take the case of Martha Jones, right in our factory. Martha comes into the factory and she goes on a sewing machine that requires in the running dexterous fingers and handling. A good operator, a pacemaker, will earn 35 cents an hour. Martha does not know that work yet. One of the reasons we know she is not competent is that by following up and seeing that she gets the proper instructions and seeing that she has been made properly interested in the work, she is not able to reach even 18 cents an hour. She is not suited to that work. We put her on a similar class of work, and finally find that at another job, another sewing machine, she takes a liking to it—she takes to the water. Now, at that job standard workers are only earning 25 cents an hour and she makes the money without any nervous strain, without any undue exertion, and makes it readily and easily, so it is a pleasure to work, and she is thriving under it. That is an actual case. That is a practical application of this thing.

Mr. DENISON. Do you think that the civil-service law, which permits the Government to employ a class of laborers because of their having passed a certain examination, when they go into a certain class of work that the requirements of that civil-service law would interfere in any way with the application of this principle?

Mr. FEISS. I think not at all.

Mr. DENISON. What becomes of the men who become crippled or maimed in the work under your system?

Mr. Feiss. In our line of work——

Mr. Denison. I do not mean particularly your business, but I mean your system.

Mr. Feiss. I do not know that the workings of scientific management have particularly provided to take care of them, except it provides at the right end better protection for him. You know that the safety experts will all tell you, without a single exception, that safety devices and education are the two things to avoid accidents; that is, the preventive work; and of those two the most important is the educative part of it. I believe there is no exception to that claim.

Now, scientific management, in the first place, means that investigation has devised for all this work the best type of safety devices ever devised for the job; and, in the second place, assuming all the responsibility they are assuming, of educating the worker in all aspects of his job, has accomplished that end; so that you will find the actual records in scientifically managed shops show it has reduced the number of accidents.

Mr. Denison. I have no doubt of that.

Mr. Feiss. But when it comes to taking care of them scientific management as practiced has not devised any one way, except in all scientifically managed shops with which I am acquainted there is a tendency to make a scientific investigation of the insurance possibilities, and many of them are adopting them.

Mr. Denison. But under practical application of the principles of scientific management, those who become crippled or maimed in any way in the course of their work necessarily have to be eliminated; is that true?

Mr. Feiss. Yes; but they have to be taken care of.

Mr. Denison. That is, they can not be retained in the work where they are not as efficient?

Mr. Feiss. Certainly. And the fellow who gets broken down from being driven, overworked, appears as a quitter. You will find the labor turnover, the men who quit scientific management shops, far less than under the old shops. We have records going back seven years by which the operator who is qnitting writes down his reason for quitting and we write down ours, and our reason being the reason given by the employment service department, which has charge of the employee and the educative work, discipline, health, and so on of the worker, and makes an investigation of each case. And we have had not a single case in seven years where the investigation showed anybody quitting because of overwork, of overstrain, nor where the worker has claimed so, and we work at a good rate.

Mr. Denison. I have seen some concerns where employees get maimed and they retain them in the employement not because they are as efficient as others but because from a humanitarian standpoint they feel that the industry owes them that assistance. Do you think that is reconcilable with the efficiency system of scientific management?

Mr. Feiss. Oh, yes. Take the superannuated; you will find that scientific management has found several things; you will find many superannuated men like the oldest employee in our factory, the oldest man, who has been with us for 45 years and more, and he is well to do, very well to do. He has stated on several occasions that the object of his life is to die in the employment of Joseph Feiss & Co. Now, it would be a crime to lay that man off for any reason whatever. That man was provided with a job, and scientific management is finding work that those superannuated employees can do very efficiently by means of stop watches and other researches—lots of them. We have a number of old men who are taking care of work we did not know before they could do.

Mr. SMITH. Do you believe in piecework, Mr. Feiss?

Mr. FEISS. I believe that the particular form of payment makes very little difference. I believe that a straight day rate lacks any initiative or lacks the idea of a dividend; that is, I believe that you should go out to the workers to train them; that you owe it to the community at large, from the point of view of production and service, to obtain the best possible output that you can. By "best possible output" I mean just what Mr. Taylor meant; that is, that amount of output which will make a skilled worker and make him thrive under it, just like your daily work under which you thrive. It does not mean overwork by any means; it eliminates overwork. And in order to do so, because you want to do so, several things are necessary, one of which is that you obtain accurate knowledge of how the best possible work can be obtained and what are its limits. It has then a very certain confined radius that limits the best possible work which a man can continuously perform day after day and year after year and which will not harm him but do him good.

Another thing necessary to do is to obtain that knowledge and to train him how to use that, to impart it to him; and the second is to make it to his interest to do so. That is all scientific management. Now, he is not going to do it unless he is stimulated, as people call it; in other words, unless you make it to his interest and you have to pay him his dividend; and wherever we pay it in the way of piece rate, we arrive at a scientific piece rate, which we establish and is absolutely guaranteed and we will give a bond to these working assuring them that rate.

Mr. SMITH. Is your business conducted on piecework?

Mr. FEISS. It is a form of piecework. It is a little bit complicated and has the bonus principle over a certain rate; but whether on the straight piecework, bonuses, differential, piece rate, or premium it makes no difference. Those are forms which should be used to guard the work, and the worker and some workmen understand one form better and like one form better than others. In one line of our work the most simple and practicable and useful form is the bonus method; in another work practically a straight piecework. The point is to know definitely what he ought to earn and how much more he will get by conforming to the instructions and putting the best foot forward; in other words, cooperation, so as to help you from the standpoint of production.

Mr. SMITH. Your factory is run on a seven-hour basis?

Mr. FEISS. Our factory is run on the basis that the ideal hours should be 48 hours a week or less.

Mr. SMITH. I understood you to say seven hours a day.

Mr. FEISS. Personally I believe that much of the legislation on the 48-hour basis is not altogether intelligent. I believe that the ultimate ideal working week for the worker is from eight to nine hours a day for five days a week. I think there will be less waste.

Mr. SMITH. I do not get you correctly on that. I understood your factory operated on a seven-hour basis?

Mr. FEISS. I want to explain that to you. We have no definite quitting time.

Mr. SMITH. Yes; I heard you explain that before.

Mr. FEISS. Therefore if the workers accomplish their task in about the standard hours they will get off early, and the average working time for the vast majority of workers the year around in our factory is less than seven hours a day; that is, it is less than 45 hours a week.

Mr. SMITH. Your factory is a very highly efficient factory; you have it very well organized, and I will ask you if you can run your factory successfully upon a seven-hour basis?

Mr. FEISS. With the aid of our thorough investigations of the research department, by time study with stop watches, and other time methods (we have made special devices and so on) proper research, proper distribution of returns, and proper organization—in other words, scientific management—I will say we are.

Mr. SMITH. And you think a person can do a good day's work in seven hours, and possibly as much as he ought to do?

Mr. FEISS. Yes; under those conditions. We are doing more than what you do.

Mr. SMITH. Do you approve of having an eight-hour day system, or approve of eight hours?

Mr. FEISS. Yes; I believe that the working hours in every industry should be limited to those hours, whatever they happen to be, beyond which human energy will flag and tire; and they should be reduced as much more as scientific means of management, in the cooperation of the employer and employee, can make them by saving time.

Mr. SMITH. And you favor seven hours as a day's work, I take it?

Mr. FEISS. Why, I favor a short week, Mr. Smith. I would like to be clear on that.

Mr. SMITH. A seven-hour day. So that you will not be misled, a little while ago the Borland amendment was up here.

Mr. FEISS. I may have misunderstood your question.

Mr. SMITH. The Government employees are working seven hours. A little while ago we had the Borland amendment up, which set eight hours' work, or an eight-hour workday for the clerk. That is involved in the question I am asking here. You think in the factory a man can do a good day's work in seven hours, and rather approve of a seven-hour day?

Mr. FEISS. Yes; provided he does his full day's work.

Mr. SMITH. Oh, yes; he ought to be working faithfully.

Mr. FEISS. I should say if a Government employee was required to do so much work a day as a standard, that a time study established, and if he can do it in five hours, all the better.

Mr. SMITH. And I take it you would favor seven hours a day work, then?

Mr. FEISS. If plain daywork, without any stimulating factor, I would certainly be against it.

Mr. SMITH. Under your system of efficiency, seven hours would be sufficient?

Mr. FEISS. Yes. I am not boasting of our system, because the system is not entirely ours. We have developed it; the inspiration has come from many big men, although we have never employed a big man about it.

Mr. SMITH. You have made a very fine explanation.

Mr. FEISS. I am willing to boast; I am willing to say this, that in many departments if the Government worker as well as other workers had their jobs scientifically time studied for them, that they would perform more service for the Government for the same money or better money, on less hours, at a cheaper cost.

Mr. SMITH. Do you think the manufacturing industry of the country would be satisfied with a seven-hour day?

Mr. FEISS. I would not want to speak for them, because when you say "manufacturing industry"——

Mr. SMITH. That is what we have to legislate for. We want to do the same by all the factories, and you are comparing yours——

Mr. FEISS. Who do you mean, the management or the workers?

Mr. SMITH. I mean the factories, the proprietors and manufacturers, or the ones who operate the business.

Mr. FEISS. You, of course, will find as many shades and differences of opinion as there are manufacturers. But I am sure that the best of them would be satisfied provided that laws were uniform throughout the country.

Mr. SMITH. The uniform day provided by law is about 10 hours?

Mr. FEISS. The only objection I have ever heard by any manufacturer worth while to the eight-hour law was the fact that his locality or State would force him to work eight hours while the fellow in the State next door would be permitted to work longer, and that he would be more than satisfied if the Government passed legislation for all along that line. In fact, you will find the attitude to be of the enlightened management, and more and more of them are becoming enlightened, that he is willing to have sane legislation in a general way in order to protect him from the man who has not got the right ideals and ideas. We would be delighted ourselves if you passed an eight-hour day. As I stated before, I myself believe that the best thing for the worker and for the industry, and their interests are mutual, would be a limitation of the hours per week, so that the workers could put in their best efforts during five days of the week and get two whole days of rest.

Mr. DENISON. Are you acquainted with one Henry Ford, of Michigan?

Mr. FEISS. Very slightly; I know several of his managers.

Mr. DENISON. Does he have scientific methods in his factories?

Mr. FEISS. He decidedly has not, only as to some mechanics and particular operations.

Mr. DENISON. Hasn't he a system of dividing profits and dividends at the end of the year?

Mr. FEISS. He has some.

Mr. DENISON. Is that reconciliable with scientific management, or not?

Mr. FEISS. It is not in the way it was done. Mind you, I am quoting my personal opinion.

STATEMENT OF BRIG. GEN. WILLIAM CROZIER, CHIEF OF ORDNANCE, UNITED STATES ARMY.

Mr. BROWNE. You may proceed, General. We are sorry we have not a full committee, but what you say will be taken down, and the members of the committee will all read it.

Gen. CROZIER. I am sorry I have not had the time at my disposal to be present at the hearings you have had so far, Mr. Chairman, and I may duplicate or attempt to duplicate some information you have already had. If so, it will not trouble me for you to stop me and tell me to go along on a different line.

Of course, I am speaking of this bill that has been introduced by Mr. Tavenner, House of Representatives, No. 8665, and I have some things to be criticized very early in the bill, commencing with the preamble.

Mr. BROWNE. We have stricken the whereases out. That has all been stricken out.

Gen. CROZIER. If they are all out of the record, I need not say anything about them, but if they are before you and within your cognizance, I would like to mention some things in which I think they are entirely incorrect and contrary to the fact, as the fact exists in the arsenals of the Ordnance Department.

Mr. BROWNE. You may say what you care to about those.

Gen. CROZIER. In the second whereas here it is stated that a stop watch is used in timing the workmen while at work to ascertain the maximum amount of work possible for the most capable man in a given time, and making it the standard time in which work must be done, and by a system of premiums and bonuses, together with disciplinary measures sufficiently severe to enforce the system, this standard time is the speed to which all workmen must eventually attain if they are to retain their employment. That is not true in regard to the arsenals of the Ordnance Department. The time in which a piece of work can reasonably be expected to be done is ascertained. It is not the fastest time which can be made by the most capable man. And the standard time is one which is determined by timing the work done by a good workman and then adding to that very considerable allowances of time, oftentimes as much as two-thirds, to get the standard time which workmen are expected to attain, and for attaining which they are given a very considerable premium or bonus; and for measurably approaching it they are given some premium or bonus, with the commendation which goes with a premium or bonus.

In the third whereas given in the preamble it is stated that the timing and bonus features will have the effect to further aggravate accident disabilities and mortality. Our experience in the Government arsenals, particularly in the one where we have established time study and the premium system of payment to the greatest extent, is that the workers under the premium system are subject to a less percentage of accidents than the workers who are working under the day system. So that the fact is the absolute contrary of this statement in this paragraph of the preamble.

I had intended to make some definition of time study, but I fancy you have had that already, from the number and character of the witnesses who have been before you, and I will not take up your time to repeat what probably has been very well said about that. I will add my testimony to that which you have probably had from other witnesses, that one of the principal features of time study is to eliminate the pacemaker, by whom an unintelligent standard is set merely by the exhibition of what he is capable of, and to replace him by a rational scientific study, the object of which is to indicate the time in which a work could reasonably be expected to be done.

I think it is altogether likely, also, Mr. Chairman, that you have had a definition of a premium system.

Mr. **Browne**. We have had several definitions, but I think we would like to hear yours.

Gen. **Crozier**. It has been necessary in the War Department in operating under legislation which was contained in the Army bill of last year to arrive at some conclusion as to what a premium system is and what a premium payment is, in contradistinction to piecework payment. The definition, as I have advanced it, and under which I have operated in the arsenals of the Ordnance Department, is that the premium system amounts in effect to a piecework system with a low limit of pay beyond which the compensation of the workman shall not be allowed to fall, irrespective of his output; and that a piecework system is a method of payment in which the compensation depends directly upon the output, is probably frequently proportionate, but always depends upon it, and has neither a high limit nor a low limit; the premium system having no high limit but having a low limit.

Now I will go on and state to you some of the experiences that the Ordnance Department has had under a time study and premium system as we have employed it. For your information I will state that at the Watertown Arsenal, which is near Boston, Mass., and which is the Government seacoast gun factory, where we also make armor-piercing projectiles, is the only establishment at which I have installed both time study and premium payments. And at the other arsenals we have had instituted sometimes premium payment, oftentimes piecework payment, but not time study; that is, as it is scientifically understood.

As to the effect of our system at the Watertown Arsenal, I have made to me every month a statement of all the employees who have, during that month, worked for any part of the time under the premium system. Here is the statement for the month of January, 1916. From this statement it appears that the total number of employees who worked on premium jobs at any time during that month was 302 out of about 600 employees at the arsenal. Running down along the list of laborers, my eye is caught by the name of "C. J. Sullivan," who is an employee, and he has a total pay at his day rate during the month of January of $51.41. He made in premiums during that month $13.48.

S. O. Brown, a $2-a-day laborer, whose pay under his day-rate compensation was $52, made $14.75 extra. I may say that all of these men received as day wages either $2 or $2.24; most of them $2 and a few $2.24. Running down the list of premiums, I see one who made $14.87; one who made $11.72; one who made $16.04—and they vary from these high figures down to 55 cents, which is the lowest.

You understand that it has not been possible at the Watertown Arsenal to have all the work done under the premium system. Oftentimes it has been impossible to make time studies of the work. Sometimes there has been only one job of the kind to be performed, and a time study made of that job would have left nothing to which to apply it. But we have succeeded with the laborers in having something over 23 per cent of their work done under the premium system. And the average premium which they earned was 33.42 per cent of their total pay under their day-rate system; that is, those who worked on premium jobs on the average increased their pay while so working by 33.42 per cent.

I have the list arranged by trades and I will leave the list with the stenographer, Mr. Chairman, if you care to have the list published.

Mr. **Browne**. That will go in the record.

Gen. **Crozier**. I will simply mention one or two rather striking instances of premiums, the largest of which are ordinarily earned by machinists. One machinist whose regular pay was $3.76 and who was apparently promoted during the month from $3.52, so that he worked 3 days at $3.52 and 21 days at $3.76, has a total pay at his day rate of $96.56. He received as a premium $35.95. And I will give the summary for the machinists. That was a high payment, of course. I do not mean to say that they all did like that. They did not. But they received on an average for the time they were working on premium jobs 24.75 per cent increase over their day pay. And as to the men by whom this kind of work was done and as to how it was spread out over the shop, I can say that during that month 67 per cent of all the work done by the machinists was done on premium jobs; and the total amount of pay on premium jobs to the machinists was $2,222.79.

Now, I can sum up the whole statement by saying that the total amount of premiums paid during the month of January to 302 workmen, who worked during some part of that month on premium jobs, was $3,304.07; so that the average amount of premium paid to each one of those employees who so worked was $10.94. The total amount of the pay roll for the arsenal for that month, including all employees, was $45,808.43.

Mr. **Smith**. How many employees did you say, General?

Gen. **Crozier**. About 600. So you will see, Mr. Smith, that about half of them had premium jobs at some time during the month.

(The statement furnished by Gen. Crozier is as follows:)

Watertown Arsenal, January, 1916.

Total number of employees who worked on premium	302
Total amount of premium paid	$3,304.07
Average amount of premium paid per employee	$10.94
Amount of pay roll	$45,808.43

The above figures do not include the four men, nor the amounts paid them, mentioned on the last sheet of attached statement.

Premiums earned during month of January, 1916.

LABORERS.

No.	Name.	Time.	Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.	Hours worked on premium.	Average premium per cent earned.
AY		*Ds. hrs.*					*Hrs. Min.*	*Hrs. Min.*	
2	P. McKenna......	21 1¼	$2.00	$46.31	$3.51	$49.82	14 2	42 25	33.08
6	V. L. Carleton....	25 0	2.00	52.00	7.21	59.21	28 50	95 15	30.27
7	C. J. Sullivan.....	24 5¾	2.00	51.44	13.48	64.92	52 55	172 20	31.29
10	R. Fallom.........	15 ¾	2.00	53.50	3.36	56.86	13 26	28 5	47.83
11	M. Farraher......	23 4½	2.00	49.13	6.48	55.61	25 55	72 10	35.91
12	S. O'Brien........	25 0	2.00	52.00	14.75	66.75	59 0	183 25	32.17
14	P. Kilbride.......	24 0	2.00	50.00	10.11	60.11	40 27	132 55	30.43
15	J. Callaghan......	24 7½	2.00	51.88	.16	52.04	0 39	1 40	39.00
17	J. Gallagher......	18 4	2.00	40.00	2.04	42.04	8 9	22 36	36.09
18	J. Wasilec........	24 0	52.00	52.00	6.71	58.71	26 50	87 15	30.75
19	P. J. Campbell....	20 4	2.24	48.16	14.87	63.03	53 7	164 0	32.39
20	I. Barnoth........	22 0	2.00	52.00	6.07	58.07	24 18	68 5	35.69
21	M. Manning.......	22 0	2.00	48.00	9.68	57.68	38 42	120 55	32.01
26	J. J. Pettit........	24 4	2.00	53.00	11.12	64.12	44 28	123 15	36.08
33	J. Meehan........	16 1⅔	2.00	37.73	4.90	42.63	19 35	72 25	25.04
34	J. Blake...........	13 0	2.00	26.00	5.85	31.85	23 25	76 0	30.81
40	J. J. Britt.........	25 0	2.00	52.00	1.07	53.07	4 17	11 20	37.79
45	D. J. Callahan....	19 3⅓	2.00	44.84	5.60	50.44	22 25	45 20	49.45
52	M. Lynch.........	25	2.00	52.00	16.04	68.04	64 10	186 40	34.38
56	A. Di Tullio.......	20 2⅝	2.00	42.71	3.74	46.45	14 58	43 20	34.54
DF									
86	L. B. Frye........	24 7	2.00	61.75	5.44	57.19	21 46	57 30	37.86
94	T. Dunn..........	25 0	2.00	52.00	1.09	53.09	4 21	11 55	36.50
DH									
8	O. L. Needham...	23 7	2.24	55.72	.60	56.32	2 8	10 30	20.32
9	C. S. Bassett.....	22 5	2.24	57.54	.55	58.09	1 58	8 0	24.58
AD									
54	J. Connolly......	25 0	2.24	58.24	5.41	63.65	19 20	48 35	39.79
	Total.......	....	....	....	159.84	....	630 11	1,885 55	34.24

Premium percentage of shop$=\frac{\text{630 hours 11 minutes}}{\text{1,885 hours 55 minutes}}=$33.42 per cent.
Hours worked on premium is 23.16 per cent of the entire working time of all employees of the same class.

TEAMSTERS.

AY									
3	W. M. Costello ...	18 0	$2.24	$40.32	$13.01	$53.33	46 28	144 0	32.27
5	T. Leamy.........	25 0	2.00	52.00	16.17	68.17	64 41	200 10	32.31
8	P. Maguire........	10 5 5/12	2.24	26.16	5.75	31.91	20 30	61 25	33.38
29	C. W. Beckwith..	25 0	2.00	52.00	15.27	67.27	61 4	178 10	34.28
	Total.......	....	....	....	60.20	....	192 43	583 45	33.06

Premium percentage of shop$=\frac{\text{192 hours 43 minutes}}{\text{583 hours 46 minutes}}=$33.01 per cent.
Hours worked on premium is 92.74 per cent of the entire working time of all employees of the same class.

ENGINEER OF LOCE CRANE.

AY 39	R. H. Russell.....	28 1¾	$89.00	$82.79	$16.82	$99.61	47 31	154 15	30.80

Premium percentage of shop=30.80 per cent.
Hours worked on premium is 68.33 of the entire working time of all employees of the same class.

Premiums earned during month of January, 1916—Continued.

RIGGER.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
		Ds.	*hrs.*					*Hrs.*	*Min.*	*Hrs.*	*Min.*	
AY 13	H. Pitts..........	28	5¾	$66.00	$65.38	$13.54	$78.92	49	14	159	45	30.82

Premium percentage of shop=30.82 per cent.
Hours worked on premium is 24.18 per cent of the entire working time of all employees of the same class.

APPRENTICE MOLDER.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
DF 19	F. M. Kirwan....	24	½	$2.28	$57.14	$8.18	$65.32	28	43	134	10	21.40

Premium percentage of shop=21.40 per cent.
Hours worked on premium is 69.70 per cent of the entire working time of all employees of the same class.

SKILLED LABORER.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
AY 28	P. J. Noone......	20	7⅞	$2.56	$56.21	$14.20	$60.41	44	22	132	40	33.44
DW 69	P. R. L. Smith...	25	0	2.80	72.80	.42	73.22	1	12	3	35	33.49
	Total......					14.62		45	34	136	15	33.47

Premium percentage of shop=$\frac{\text{45 hours 34 minutes}}{\text{136 hours 15 minutes}}$=33.44 per cent.
Hours worked on premium is 4.38 per cent of the entire working time of all employees of the same class.

SKILLED WORKMEN.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
AY 16	M. Tuohy........	24	0	$2.40	$62.40	$4.93	$67.33	16	26	44	25	36.98
51	T. Quirke........	26	3	62.00	61.74	14.04	75.78	54	19	167	20	32.46
DS 27	J. O'Brien........	24	5¾	2.24	60.83	4.90	65.73	17	29	51	15	34.11
39	W. M. O'Brien...	22	0	2.24	54.32	7.23	61.55	25	48	81	5	31.82
41	T. J. Conway.....	24	0	2.48	59.52	8.90	68.42	28	43	90	45	31.64
45	H. O'Connor.....	25	0	3.28	85.28	2.62	87.90	6	23	24	15	26.32
	Total......					42.62		149	8	459	5	32.22

Premium percentage of shop=$\frac{\text{149 hours 8 minutes}}{\text{459 hours 5 minutes}}$=32.49 per cent.
Hours worked on premium is 21.60 per cent of the entire working time of all employees of the same class.

MOLDERS.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
DF 4	J. J. Flynn.......	19	0	$3.04	$60.80	$4.75	$65.55	12	30	72	26	17.26
5	J. F. Gatte........	5	0	3.52	17.60	2.19	19.79	4	59	38	50	12.83
7	J. Hicklin........	25	0	3.52	91.52	18.02	109.54	40	58	186	40	21.95
8	T. Kane...........	25	0	3.52	91.52	21.09	112.61	47	56	164	35	25.12
10	G. E. Lawson....	25	0	3.52	91.52	13.00	104.52	29	33	113	20	26.07
11	J. H. Murphy....	3	7	3.52	13.64	1.81	15.45	4	7	24	40	16.69
12	J. R. Cooney.....	23	6½	3.52	87.34	16.20	103.54	6	50	110	50	33.23
	Total......					77.06		176	53	711	20	22.45

Premium percentage of shop=$\frac{\text{176 hours 53 minutes}}{\text{711 hours 20 minutes}}$=24.87 per cent.
Hours worked on premium is 70.19 per cent of the entire working time of all employees of the same class.

Premiums earned during month of January, 1916—Continued.

MOLDER'S HELPERS.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
DF		*Ds.*	*hrs.*					*Hrs.*	*Min.*	*Hrs.*	*Min.*	
39	G. G. Wright	23	7½	$2.24	$55.86	$15.22	$71.08	54	21	137	5	39.65
45	J. P. J. Ryan	20	6½	2.24	57.82	7.86	65.68	28	5	59	50	46.94
47	J. Manning	24	0	2.00	52.00	1.06	53.06	4	15	12	15	34.69
49	W. F. Cullinane	20	0	2.00	42.00	1.92	43.92	7	40	17	50	42.99
50	M. Tierney	20	4	2.24	48.16	3.91	52.07	13	58	33	35	41.59
54	M. Burke	25	0	2.24	58.24	.12	58.36		25		50	50.00
55	W. Lyons	25	0	2.00	52.00	.02	52.02		4	1	15	5.33
59	T. J. Lyons	28	4	70.00	68.84	6.25	75.09	21	28	80	55	26.53
60	C. Murphy	25	0	2.24	58.24	6.10	64.34	21	47	57	45	37.72
63	D. Fisher	21	4	2.00	52.00	1.33	53.33	5	19	15	50	33.58
66	J. J. Moran	23	0	2.00	48.00	3.59	51.59	14	22	35	40	40.28
	Total					47.38		171	44	452	50	36.30

Premium percentage of shop=$\frac{171 \text{ hours } 44 \text{ minutes}}{452 \text{ hours } 50 \text{ minutes}}$=37.92 per cent.

Hours worked on premium is 10.74 per cent of the entire working time of all employees of the same class.

CHIPPERS.

DF												
41	J. F. Tovey	25	0	$2.24	$58.24	$10.00	$68.24	35	42	116	55	30.53
87	R. Lannon	25	0	2.48	64.48	4.26	68.74	13	44	42	45	32.12
88	J. Connolly	25	0	2.32	60.32	15.52	75.84	53	31	154	45	34.58
89	J. J. Connolly	25	0	2.56	66.56	4.98	71.54					
93	T. Flanagan	22	0	2.24	51.52	8.14	59.66	29	5	99	35	29.21
96	M. J. Sullivan	25	0	2.24	58.24	6.33	64.57	22	37	83	5	27.22
98	F. E. Howland	25	0	2.24	58.24	10.21	68.45	36	27	122	55	29.65
DM												
312	N. Barry	25	0	2.24	58.24	11.21	69.45	40	2	115	0	34.81
	Total					70.65		231	8	735	0	31.16

Premium percentage of shop=$\frac{231 \text{ hours } 8 \text{ minutes}}{735 \text{ hours.}}$=31.45 per cent.

Hours worked on premium is 37.35 per cent of the entire working time of all employees of the same class.

FURNACE HELPERS.

DF												
85	E. English	28	7½	$70.00	$69.85	$4.99	$74.84	17	7	46	50	36.55
DS												
29	J. Hart	3	0	2.24	6.72	1.45	8.17	5	11	23	00	22.54
30	J. H. Donahue	25	0	2.24	58.24	8.07	66.31	28	48	95	15	30.04
37	P. J. Curran	24	6½	2.16	55.76	7.58	63.34	28	5	43	50	64.07
41	T. J. Conway	4	8	2.24	4.48	.01	4.49		2	1	30	2.22
46	G. Di Luzio	22	1½	2.24	66.22	8.40	74.62	30	00	96	00	31.25
	Total					30.50		109	13	306	25	31.15

Premium percentage of shop=$\frac{109 \text{ hours } 13 \text{ minutes}}{306 \text{ hours } 25 \text{ minutes}}$=35.64 per cent.

Hours worked on premium is 36.67 per cent of the entire working time of all employees of the same class.

FOREMAN MACHINIST.

DM												
2	A. Crawford	28	7½	$1,600.00	$129.72	$18.17	$147.89					

Premiums earned during month of January, 1916—Continued.

GANG BOSS.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
DM		*Ds.*	*hrs.*					*Hrs.*	*Min.*	*Hrs.*	*Min.*	
4	F. D. Burns	29	0	$100.00	$100.00	$12.56	$112.56					
5	O. G. Sthol	29	0	100.00	100.00	9.62	109.62					
7	J. D. Flynn	29	0	100.00	100.00	5.02	105.02					
8	G. H. Jones	28	0	100.00	96.67	13.96	110.63					
10	W. F. Penny	28	7½	100.00	99.79	17.24	117.03					
11	H. E. Fisk	4	7½	100.00	19.79	11.01	30.80					
12	R. H. Stackhouse	27	0	100.00	93.33	17.33	110.66					
15	J. F. W. Hedge	27	6¼	100.00	100.00	12.56	112.56					
	Total					117.47						

TOOLMAKERS.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
DM.												
18	C. E. Hunt	12	4	$3.76	$52.64	$2.43	$55.07	5	10	5	40	91.18
23	J. J. Collins	4	0	3.28	16.40							
23	do	21	0	3.52	73.92	8.79	99.11	20	21	56	50	3?.81
24	M. H. Nethercote	4	0	3.68	18.40							
24	do	15	0	4.56	68.40							
24	do	6	0	4.80	28.80		115.60			12	00	
25	F. S. Atwood	4	0	3.52	17.60							
25	do	21	0	4.16	87.36	.43	105.39		50	6	50	12.20
29	C. J. Tarr	25	0	3.28	85.28	2.50	87.78	6	6	77	20	7.89
32	C. M. T. Anderson	4	0	3.52	17.60							
32	do	21	0	3.76	78.96	6.97	103.63	14	58	104	5	14.38
35	O. A. Erhardt	4	0	3.28	16.40							
35	do	20	7½	3.52	73.70	5.99	96.09	14	15	146	5	9.75
37	W. F. Toomy	3	4	3.52	15.84							
37	do	18	0	4.16	74.88	15.93	106.65	33	31	108	30	30.89
119	E. Swensson	24	4	3.28	83.64	2.73	86.37	6	40	36	25	18.31
	Total					45.77		101	51	553	45	24.49

$$\text{Premium percentage of shop} = \frac{\text{101 hours 51 minutes}}{\text{553 hours 45 minutes}} = 18.80 \text{ per cent.}$$

Hours worked on premium is 19.50 per cent of the entire working time of all employees of the same class.

MACHINIST.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
31	G. F. Lincoln	25	0	3.04	$79.04	$2.19	$81.23	5	46	90	5	6.40
33	M. B. Hassett	25	0	3.28	85.28	25.02	110.30	61	2	198	50	30.70
34	G. H. Rayne	22	7¼	3.04	72.68	3.48	76.16	9	9	27	50	32.88
38	W. J. Cusack	25	0	3.28	85.28	32.86	118.14	80	9	194	10	41.28
39	J. Driscoll	4	0	3.52	17.60	5.37	22.97	12	13			
39	do	21	0	3.76	78.96	20.06	99.02	42	41	189	5	29.03
41	T. J. Sheehan	4	0	3.52	17.60							
41	do	21	0	3.76	78.96	33.95	130.51	73	14	190	5	38.53
42	H. W. Carlson	4	0	3.28	16.40							
42	do	21	0	3.52	73.92	25.78	116.10	58	36	169	10	34.64
43	W. H. Ash	25	0	3.04	79.04	.11	79.15		18	50	50	.59
44	H. D. Roberts	23	3½	3.04	77.52	7.64	85.16	20	7	136	55	14.69
45	C. Hellquist	24	0	3.28	82.00	17.68	99.68	43	8	120	50	35.70
47	P. C. McGinnis	25	0	3.52	91.52	13.68	105.20	31	5	205	55	15.10
48	D. F. Mannix	22	0	3.04	75.24	7.85	83.09	20	39	171	40	12.03
49	B. S. Ford	25	0	3.28	85.28	12.67	97.95	30	54	225	20	13.71
50	E. A. Petterson	4	0	3.52	17.60							
50	do	21	0	3.76	78.96	35.95	132.51	76	30	210	20	36.37
51	C. L. Gendron	25	0	3.04	79.04	7.46	86.50	19	38	101	30	19.34
52	M. G. Cunningham	24	0	3.28	82.00	16.41	98.41	40	2	169	45	23.58
53	W. S. Clarke	24	0	3.04	79.04	.13	79.17		20	1	55	17.39
54	A. E. Magnuson	25	0	3.28	85.28	18.14	103.42	44	14	181	35	24.36
55	S. E. Beck	25	0	2.80	72.80	8.18	80.98	23	22	174	15	13.41
57	J. F. McCarthy	23	1½	2.80	69.83	.83	70.66	2	22	8	25	28.12
59	O. Borgstrom	24	0	3.28	82.00	30.05	112.05	73	18	245	25	29.87
61	A. Le Roy	22	3	3.28	84.87	8.67	93.54	21	9	210	55	16.03
63	P. Drew	25	0	3.04	79.04	12.75	91.79	33	34	181	5	18.54

Premiums earned during month of January, 1916—Continued.

MACHINIST—Continued.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
		Ds.	*hrs.*					*Hrs.*	*Min.*	*Hrs.*	*Min.*	
64	C. R. Barlow	4	0	$3.52	$17.60							
64	do	21	0	3.76	78.96	$41.00	$137.56	88	34	222	5	39.88
65	J. A. Forrest	4	0	3.28	16.40							
65	do	21	0	3.52	73.92	17.09	107.41	38	50	153	00	25.38
66	J. J. Henry	23	0	3.28	78.72	20.77	99.49	50	40	177	10	28.60
67	F. A. Holway	24	1½	3.28	84.26	14.53	98.79	35	26	192	40	18.39
69	S. G. Halberg	23	4	3.52	90.64	21.40	112.04	48	38	244	20	19.90
70	J. W. McDonald	21	0	3.04	69.92	14.21	84.13	37	24	143	20	26.09
72	A. F. Nutting	25	0	3.04	79.04	.18	79.22		28	204	25	.23
73	V. Swenson	4	0	3.28	16.40							
73	do	7	5	3.52	26.84	8.55	51.79	19	52	57	15	34.70
75	N. G. Gould	25	0	3.52	91.52	5.65	97.17	12	51	48	40	26.40
76	C. J. Murnane	2	1½	3.28	16.40							
76	do	21	0	3.52	73.92	35.56	125.88	80	49	181	40	44.49
77	A. H. Dill	25	0	3.04	79.04	28.04	107.08	73	48	196	55	37.48
79	E. J. Fagan	25	0	2.80	72.80	4.95	77.75	14	9	191	40	7.38
80	F. A. Nugent	25	0	3.04	79.04	19.29	98.33	50	46	193	45	26.20
81	R. Smith	23	4	3.28	80.36	20.27	100.63	49	26	175	30	28.17
82	T. Whitworth	24	7	3.04	78.66	14.04	92.70	36	57	199	00	18.57
83	C. J. Frechette	7	0	3.04	24.32	.65	24.97	1	43	55	50	3.07
84	O. Cheney	22	0	3.28	75.44	16.07	91.51	39	12	154	35	25.36
85	E. J. Waterman	7	0	3.52	28.16	7.51	35.67	17	4	60	20	28.29
86	L. Anderson	24	6½	3.04	78.47	8.11	86.58	21	20	144	40	15.84
87	J. J. Cougblin	4	0	3.04	15.20							
87	do	20	0	3.28	68.88	8.92	93.00	21	51	158	30	13.79
88	P. Gaffney	24	5	2.80	71.75	13.03	84.78	37	14	194	10	19.18
90	E. M. Burns	4	0	3.28	16.40							
90	do	21	0	3.52	73.92	19.67	109.99	45	2	267	35	16.83
91	E. L. Barker	25	0	3.28	85.28	9.36	94.64	22	50	30	35	74.66
92	M. F. Cheevers	25	0	3.04	79.04	8.12	87.16	21	22	131	5	16.30
93	F. B. Hardy	25	0	3.04	79.04	30.75	109.79	80	55	227	40	35.54
94	E. Jones	23	0	3.28	82.00	9.18	91.18	22	24	167	00	13.41
95	P. T. Hughes	25	0	3.04	79.04	26.21	105.25	68	59	195	20	35.32
96	W. P. Cross	25	0	3.04	79.04	9.83	88.87	25	52	99	25	26.02
97	J. P. Larkin	25	0	3.04	79.04	7.66	86.70	20	9	154	40	13.03
98	G. W. Stuart	25	0	3.04	79.05	24.50	103.54	64	28	189	25	24.03
99	A. M. Fillebrown	2	0	3.28	13.12							
99	do	19	4	3.52	68.64	14.96	96.72	34	39	154	5	22.49
100	J. V. N. Beeman	24	5	3.04	77.90	5.43	83.33	14	17	101	25	14.08
101	O. M. Whittier	23	6½	3.04	78.47	2.04	80.51	5	23	16	20	32.96
102	W. Barker	4	0	3.52	17.60							
102	do	21	0	3.76	78.96	22.38	118.94	47	37	161	15	29.53
104	H. C. Orr	18	0	3.04	75.43	4.10	79.53	10	48	65	55	16.38
105	E. Puhpal	4	0	L3.04	15.20							
105	do	21	0	3.28	68.88	22.52	106.60	56	43	265	20	21.38
106	C. G. Lindstrom	24	6½	3.28	84.67	7.15	91.82	17	27	138	00	12.64
107	W. H. Mullen	4	0	3.04	15.20							
107	do	21	0	3.28	68.88	18.79	102.87	46	10	156	30	29.50
108	T. F. Mulrean	4	0	3.04	15.20							
108	do	21	0	3.28	68.88	13.01	97.09	32	14	144	10	22.36
109	G. F. Glidden	23	4	3.28	85.28	.19	85.47		28	5	20	8.75
111	F. L. Hapworth	4	0	3.28	16.40							
111	do	20	4	3.52	72.16	11.70	100.26	26	56	136	20	19.76
113	T. Conrad	24	3¾	3.04	77.43	6.40	83.83	16	50	56	5	30.01
114	H. A. Brown	22	4	3.04	79.04	8.47	87.51	22	17	127	5	17.53
115	W. W. Carter	14	7	3.04	78.66	6.49	85.15	17	5	87	30	19.52
116	A. Kartz	25	0	3.04	79.04	25.40	104.44	56	50	144	00	46.41
117	H. E. West	23	4	3.28	80.36	2.10	82.46	5	8	114	35	4.47
118	O. B. Schirmer	23	5¼	3.28	80.87	15.03	95.90	36	39	162	20	22.58
120	F. J. Christensen	4	0	3.04	15.20							
120	do	20	7½	3.28	68.68	10.18	94.06	25	2	118	55	21.05
121	P. J. Kelliher	26	0	3.04	79.04	11.23	90.27	29	34	182	30	16.20
122	E. T. Roby	25	0	2.56	66.56	3.40	69.96	10	38	167	20	6.35
123	J. A. MacKean	4	0	3.52	17.60							
123	do	21	0	3.76	78.96	32.40	128.96	70	52	157	15	45.07
124	J. J. Mitchell	3	0	3.28	13.12							
124	do	15	1¾	3.52	55.33	18.05	86.50	41	12	144	20	28.55
125	T. H. Chaffe	3	2¼	3.04	13.02							
125	do	20	6½	3.28	68.27	18.71	100.00	46	3	187	5	24.61
128	T. E. Farrell	24	7	3.28	84.87	11.23	96.10	27	24	154	50	17.70
130	B. L. Scherer	24	7	3.04	78.66	14.52	93.18	38	13	199		10.20
131	E. A. Hanson	23	0	3.28	78.72	12.01	90.73	29	18	82	35	36.48

Premiums earned during month of January, 1916—Continued.

MACHINIST—Continued.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
		Ds.	*hrs.*					*Hrs.*	*Min.*	*Hrs.*	*Min.*	
132	E. Hess	24	7½	3.04	78.85	22.43	101.28	59	1	199	30	29.58
133	T. F. McGowan	24	¾	3.04	78.47	21.89	100.36	57	37	195	30	29.47
135	T. V. Au Coin	25	0	3.04	79.04	21.17	100.21	55	43	187	..	29.80
136	M. J. Costigan	25	0	2.80	72.80	16.39	89.19	46	50	192	5	24.38
138	A. M. Stirling	9	1½	3.04	31.98	.38	32.36	1	..	46	50	2.14
140	D. C. Moreland	10	0	3.04	79.04	2.27	81.31	5	58	62	35	9.53
141	P. W. O'Donnell	4	0	3.04	15.20	....	....	..	..	...	..	....
141	.....do	21	0	3.28	68.88	35.43	119.51	87	32	200	5	43.75
143	D. Friberg	24	7	3.04	78.66	10.78	89.44	28	22	71	5	39.90
144	N. E. Parnell	25	0	3.04	79.04	33.39	112.43	87	53	199	45	44.00
145	A. S. Pearce	24	3½	3.28	85.08	26.81	111.89	65	24	191	15	34.20
146	C. F. Carlson	3	6½	3.28	15.79	....	....	....		....		....
146	.....do	20	7½	3.52	73.70	13.16	102.65	30	24	155	15	19.58
147	C. E. Norrby	25	0	3.04	79.04	18.32	97.36	48	13	195	35	24.65
148	J. McFarland	4	0	3.04	15.20	....	....	....		....		....
148	.....do	21	0	3.28	68.88	16.73	100.81	41	1	169	15	24.23
149	W. C. Fisber	22	5	3.04	71.82	13.95	85.77	36	43	165	35	22.17
150	M. J. O'Brien	15	4	3.04	50.16	9.37	59.53	24	40	118	5	20.89
151	I. S. Pearson	25	0	3.04	79.04	11.70	90.74	30	48	195	5	15.79
153	P. L. Lacey	12	0	2.80	37.80	.73	38.53	2	6	96	00	2.19
154	F. A. Suhre	5	5	3.04	20.14	2.65	22.79	6	59	36	40	19.05
157	G. W. Greenwood	4	0	3.28	16.40	....	....	....		....		....
157	.....do	20	4	3.52	72.16	23.67	112.23	56	41	194		29.22
158	R. T. Lorrey	4	0	3.04	15.20	....	....	....		....		....
158	.....do	20	6	3.28	68.06	12.11	95.37	29	59	160	55	18.63
160	A. A. Authier	13	0	3.04	39.52	.06	39.58		10	32	15	.52
162	J. T. Brown	10	1¼	3.04	41.20	.08	41.28		13	52	30	.41
163	E. F. Smith	25	0	2.56	66.56	13.27	79.83	41	28	189	5	21.93
165	B. C. Button	25	0	3.04	79.04	17.72	96.76	46	38	173	50	26.83
168	W. J. Blake	25	0	3.28	85.28	22.71	107.99	55	23	157	00	35.28
171	G. J. Frykman	5	0	3.04	18.24	4.81	23.05	12	40	40	00	31.67
173	P. J. O'Neal	20	1	3.04	64.22	20.66	84.88	54	22	154	50	35.11
174	J. D. Regan	25	0	2.80	72.80	21.93	94.73	62	39	188	20	33.27
176	W. Edwards	18	0	3.04	57.76	3.67	61.43	9	40	27	20	35.37
177	J. Hughes	18	0	3.04	57.76	8.37	66.13	22	2	193	00	11.42
178	P. W. Clausen	25	0	3.04	79.04	15.00	94.04	39	29	129	15	30.55
180	A. Andreen	24	4	3.04	77.52	10.27	87.79	27	1	99	30	27.15
181	M. W. Bowen	22	4	3.04	79.04	.49	79.53	1	18	13	50	9.40
182	W. R. Connell	22	5½	3.04	72.01	21.79	93.80	57	21	177	00	32.40
183	F. W. Rattek	22	0	3.04	79.04	12.44	91.48	32	44	99	20	32.95
185	E. Hanf	4	0	3.28	16.40	....	....	....		....		....
185	.....do	21	0	3.52	73.92	22.93	113.25	54	6	228	10	23.71
186	E. F. Delaney	24	2	3.04	79.04	6.33	85.37	16	39	140	25	11.86
189	G. H. Major	22	6½	3.28	81.39	.24	81.63		36	67	50	.88
191	P. J. Conrad	23	4	2.80	70.00	14.38	84.38	41	5	186	25	22.04
192	E. D. Farley	24	7½	3.04	78.85	23.33	102.18	61	24	192	50	31.84
193	F. O. Franson	22	3	3.04	79.04	20.60	99.64	54	12	164	20	32.98
197	J. C. Dieselman	19	3	2.56	52.16	8.06	60.22	25	11	130	20	19.32
198	T. H. Rogers	24	0	2.80	70.00	15.15	85.15	3	18	171	15	25.28
201	C. Hansen	4	0	3.04	15.20	....	....	....		....		....
201	.....do	21	0	3.28	68.88	14.45	98.53	38	1	168	20	22.58
202	—. —. Sylvia	12	0	2.80	36.40	11.37	47.77	32	30	93	30	34.76
203	G. A. Bjorn	25	0	3.28	85.28	5.47	90.75	13	20	66	5	20.18
206	A. F. Almquist	22	3½	3.04	68.21	2.48	70.69	6	32	103	15	6.33
208	J. J. Hayden	25	0	2.80	72.80	23.38	96.18	66	48	200	00	33.40
209	J. W. Herbert	24	3	3.04	77.14	18.37	95.51	48	20	175	40	27.51
210	J. W. Dimond	23	7	3.28	81.59	29.33	110.92	71	33	156	55	45.60
211	D. J. Roche	20	0	3.04	63.84	10.93	74.77	28	46	128	20	22.42
212	C. E. Gullbrand	24	6	3.04	79.04	8.80	87.84	23	10	62	30	37.07
215	A. Greenwold	25	0	3.04	79.04	16.22	95.26	42	41	208	15	20.50
219	W. S. Jordan	25	0	3.04	79.04	10.26	89.30	27	..	196	15	13.76
220	W. G. Kennison	25	0	3.04	79.04	21.76	100.80	57	16	226	55	25.24
221	S. C. Breese	4	0	3.04	15.20	....	....	....		....		....
221	.....do	20	7½	3.28	68.68	22.70	106.58	57	25	184	50	31.06
224	J. Durb	24	7½	3.04	78.85	25.16	104.01	66	13	199	30	33.19
225	E. W. Lindquist	25	0	3.28	85.28	27.04	112.32	65	58	156	15	42.22
226	M. J. O'Halloran	19	0	3.04	66.88	12.51	79.39	32	56	128	35	25.61
230	E. A. Willey	21	3¾	3.04	70.49	10.14	80.63	26	42	99	40	26.79
234	M. Kelly	21	0	2.56	58.24	14.25	72.49	44	32	113	35	39.01
247	C. F. Roche	25	0	2.80	72.80	22.08	94.88	63	5	200	00	31.54
285	J. C. Albrecht, jr.	23	0	2.80	72.80	9.92	82.72	28	20	164	50	17.19
287	J. S. Jostedt	24	7½	3.28	85.08	28.78	113.86	70	12	200	5	35.09

Premiums earned during month of January, 1916—Continued.

MACHINIST—Continued.

No.	Name.	Time.		Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.		Hours worked on premium.		Average premium per cent earned.
		Ds.	*hrs.*					*Hrs.*	*Min*	*Hrs.*	*Min.*	
316	C. A. Sherwin	24	½	3.04	79.04	27.95	105.99	73	33	158	10	46.50
318	H. H. Hermanson	17	6	3.04	79.04	17.57	96.61	46	15	136	00	34.01
329	H. H. Beaton	23	0	2.80	72.80	5.92	78.72	16	56	57	45	29.32
331	A. Kanaan	18	7½	3.04	78.85	12.93	91.78	34	2	144	55	23.48
333	A. E. Peckham	25	0	2.80	72.80	12.11	84.91	34	37	147	00	23.55
348	F. Holzworth	4	0	3.04	15.20							
348	do	20	7½	3.28	68.68	15.90	99.78	39	14	164	45	23.81
353	J. T. Wallis	25	0	3.04	79.04	2.74	81.78	7	13	58	45	12.38
354	L. E. Allen	22	5½	3.04	72.01	1.07	73.08	2	49	102	40	2.74
358	J. E. Killion	24	7	2.80	72.45	17.91	90.36	51	10	170	2	30.04
359	J. J. J. Connearney	22	0	3.04	79.04	13.63	92.67	35	52	160	5	22.40
361	M. J. Lyons	22	0	3.04	69.92	6.50	76.42	17	6	187	45	9.11
366	A. Gohr	3	7½	3.04	15.01							
366	do	14	4	3.28	68.88	15.64	99.53	38	37	143	45	26.86
62	P. H. Connell	13	0	2.80	39.20		39.20			77	20	
152	J. A. Dirwanger	19	0	3.04	63.84		63.84			5	50	
155	H. J. White	24	6½	3.04	78.47		78.47			41	15	
	Total					2,222.79		5,619	37	22,718	40	23.76

Premium percentage of shop $=\frac{\text{5,619 hours 37 minutes}}{\text{22,718 hours 40 minutes}}=$ 24.74 per cent.

Hours worked on premium is 67.13 per cent of the entire working time of all employees of the same class

MACHINIST'S HELPER.

DM												
214	M. Egan	24	0	$2.00	$50.00	$3.10	$53.10	12	25	34	0	36.52
216	G. L. Veno	15	7½	2.24	35.70	.50	36.20	1	47	98	55	1.80
228	T. F. Kelly	25	0	2.00	52.00	14.55	66.55	58	12	139	25	41.75
229	W. F. Scherrer	24	7¼	2.00	51.94	.89	52.83	3	33	22	55	15.49
232	E. P. Davis	24	0	2.40	60.00	3.40	63.40	11	20	174	55	6.48
233	P. Kelly	25	0	2.40	62.40	8.14	70.54	27	8	66	40	40.70
235	J. T. Lovely	23	0	2.40	57.60	1.55	59.15	5	9	55	0	9.36
252	E. Colligan	25	0	2.00	52.00	.83	52.83	3	18	35	20	9.34
256	M. J. Clancy	19	0	2.24	44.80	5.50	50.30	19	39	71	50	27.35
258	T. Cunningham	25	0	2.00	52.00	10.13	62.13	40	31	157	15	25.77
259	C. J. Davis	23	4	2.00	50.00	8.66	58.66	34	39	132	30	26.15
263	P. Ward	25	0	2.00	52.00	5.11	57.11	20	26	58	5	35.18
270	W. F. Burke	22	5	2.24	52.92	13.49	66.41	48	10	132	55	36.24
275	B. F. Lord	24	7	2.24	57.96	.06	58.02		13	122	40	
277	J. A. Feeley	23	4	2.00	49.50	3.98	53.48	15	56	53	15	29.92
292	E. F. Malloy	20	6¼	2.40	52.28	4.64	56.92	15	28	85	10	18.16
298	A. T. Leonard	24	0	2.00	50.00	6.87	56.87	27	28	128	35	21.36
299	J. Mulhern	25	0	2.24	58.24	2.35	60.59	8	24	50	30	16.63
304	J. J. Gahan	22	0	2.00	46.00	3.78	49.78	15	7	48	45	31.01
309	J. H. Pomfrey	24	5	2.00	51.25	10.84	62.09	43	21	127	5	34.11
322	B. W. Griffin	23	0	2.00	50.00	6.43	56.43	25	43	111	10	23.13
332	J. Hehir	5	0	2.00	10.00	.25	10.25	1	1	2	45	36.97
335	E. J. Williams	24	6	2.00	51.50	3.06	54.56	12	15	52	40	23.26
340	E. L. Eadie	22	1	2.00	46.25	7.40	53.65	29	37	88	50	33.34
342	W. P. Gill	22	0	2.00	52.00	.95	52.92	3	49	14	55	25.59
360	W. L. Greene	24	6	2.00	52.00	1.65	53.65	6	35	17	30	37.62
365	J. Blood	25	0	2.00	52.00	11.63	63.63	46	30	190	15	24.44
369	J. E. Leighton	25	0	2.00	52.00	4.98	56.98	19	54	37	0	53.78
370	J. J. Murphy	24	4	2.24	57.12		57.12			14	0	
	Total					144.72		557	38	2,324	50	24.88

Premium percentage of shop $=\frac{\text{557 hours 38 minutes}}{\text{2,324 hours 50 minutes}}=$ 23.99 per cent.

Hours worked on premium is 16.68 per cent of the entire working time of all employees of the same class

Premiums earned during month of January, 1916—Continued.

CORE MAKER.

No.	Name.	Time.	Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.	Hours worked on premium.	Average premium per cent earned.
DF		*Ds. hrs.*					*Hrs. Min.*	*Hrs. Min.*	
76	J. J. Sullivan.....	24 6½	$3.52	$91.52	$9.93	$101.45	22 34	47 45	47.26

Premium percentage of shop=47.26 per cent.
Hours worked on premium is 24.06 per cent of the entire working time of all employees of the same class.

SCREW MAKER.

DM 159	P. J. Mahony.....	24 4	$2.80	$72.80	$11.28	$84.08	32 14	169 25	19.03

Premium percentage of shop=19.03 per cent.
Hours worked on premium is 86.44 per cent of the entire working time of all employees of the same class.

MACHINE APPRENTICE.

DM 166	A. F. Franz......	21 4½	$1.92	$43.32	$5.84	$49.16	24 21	148 35	16.39

Premium percentage of shop=16.39 per cent.
Hours worked on premium is 10.08 per cent of the entire working time of all employees of the same class.

TOOL GRINDER.

DM 249	E. Sherman......	24 7½	$2.24	$58.10	$15.89	$73.99	56 44	125 25	45.24

Premium percentage of shop =45.24 per cent.
Hours worked on premium is 62.87 per cent of the entire working time of all employees of the same class.

TOOLSMITH.

DS 38	S. Mallet.........	24 0	$3.28	$82.00	$8.50	$90.50	20 44	96	21.60

Premium percentage of shop =21.60 per cent.
Hours worked on premium is 50 per cent of the entire working time of all employees of the same class.

STEAM HAMMER DRIVER.

DS 42	J. Shea...........	25 0	$2.24	$58.24	$3.80	$62.04	13 35	51	26.63

Premium percentage of shop =26.63 per cent.
Hours worked on premium is 25.50 per cent of the entire working time of all employees of the same class.

BLACKSMITH.

DS									
3	M. T. Glynn.....	25 0	$3.52	$91.52	$12.36	$103.88	28 5	43 50	64.07
7	J. W. Winch.....	25 0	3.04	79.04	....	79.04	....	8 35	....
6	T. Coleman.......	25 0	3.28	85.28	8.59	93.87	20 58	137 55	15.20
9	J. Houllahan.....	19 0	3.04	60.80	3.98	64.78	10 28	32 40	32.04
13	O. L. Lorentzson.	23 0	3.04	72.96	19.96	92.92	52 31	166 ..	31.64
	Total......	....	....	....	44.89	....	112 2	389 ..	28.59

Premium percentage of shop= $\frac{112 \text{ hours } 2 \text{ minutes}}{389 \text{ hours}}$ =28.80 per cent.
Hours worked on premium is 34.36 per cent of the entire working time of all employees of the same class.

Premiums earned during month of January, 1916—Continued.

BLACKSMITH HELPER.

No.	Name.	Time.	Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.	Hours worked on premium.	Average premium per cent earned.
DS		*Ds. hrs.*					*Hrs. Min.*	*Hrs. Min.*	
22	P. Di Luzio......	24 0	$2.16	$56.16	$14.18	$70.34	52 32	166 00	31.65
23	J. Kendall........	19 0	2.16	43.20	3.60	46.80	13 19	96 00	13.87
24	E. A. McDonough	23 0	2.16	51.84	2.21	54.05	8 12	26 45	30.65
25	P. Burke..........	25 0	2.16	56.16	2.42	58.58	8 58	49 45	18.02
29	J. Hart............	22 3¼	2.16	52.31	5.54	57.85	20 30	71 10	28.80
34	T. Mulholland....	22 0	2.16	54.00	5.27	59.27	19 32	48 20	40.41
36	W. J. Petipas.....	25 0	2.16	56.16	1.72	57.88	6 23	24 15	26.32
40	M. J. O'Brien.....	25 0	2.16	56.16	.90	57.06	3 20	11 00	30.30
	Total.......	....	....	....	35.84	....	132 46	493 15	27.50

Premium percentage of shop=$\frac{\text{132 hours 46 minutes}}{\text{493 hours 15 minutes}}$=26.92 per cent.

Hours worked on premium is 26.39 per cent of the entire working time of all employees of the same class.

PAINTER.

No.	Name.	Time.	Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.	Hours worked on premium.	Average premium per cent earned.
DW									
74	H. A. Gildersleeve	15 0	$2.88	$61.56	$0.19	$61.75	31	4 09	12.92
78	J. F. Mallanaphy.	25 0	2.72	70.72	.78	71.50	2 17	17 25	13.11
	Total.......	....	....	....	.97	....	2 48	21 25	13.02

Premium percentage of shop=$\frac{\text{2 hours 48 minutes}}{\text{21 hours 25 minutes}}$=13.07 per cent.

Hours worked on premium is 6.69 per cent of the entire working time of all employees of the same class

CARPENTER.

No.	Name.	Time.	Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.	Hours worked on premium.	Average premium per cent earned.
DW									
52	J. Connelly.......	25 0	$3.28	$85.28	$3.38	$88.66	8 15	18 5	45.62
58	J. J. Ryan.........	25 0	3.28	85.28	25.58	110.86	62 24	223 50	27.88
59	E. A. Carlsson....	25 0	3.04	79.04	36.39	115.43	95 46	215 40	44.40
67	J. G. Torngren...	25 0	2.80	72.80	29.90	102.70	85 26	235 50	36.23
	Total.......	....	....	....	95.25	....	251 51	693 25	38.53

Premium percentage of shop=$\frac{\text{251 hours 51 minutes}}{\text{693 hours 25 minutes}}$=36.32 per cent.

Hours worked on premium is 38.89 per cent of the entire working time of all employees of the same class.

MASON HELPER.

No.	Name.	Time.	Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.	Hours worked on premium.	Average premium per cent earned.
DW 79	J. McLaughlin....	25 0	$2.40	$62.40	$9.72	$72.12	32 23	39 45	81.47

Premium percentage of shop equals 81.47 per cent.
Hours worked on premium is 19.87 per cent of the entire working time of all employees of the same class.

MACHINE OPERATORS.

No.	Name.	Time.	Day rate.	Total pay, day rate.	Premium.	Total amount paid.	Hours of premium time paid for.	Hours worked on premium.	Average premium per cent earned.
DM 351	A. Frazer.........	9 7	$2.56	$25.28	....	$25.28	....	58 25	....

Hours worked on premium is 63.15 per cent of the entire working time of all employees of same class.

Piecework earned during month of January, 1916.

No.	Name.	Time.	Day rate.	Piecework.		Total amount paid.
AY	TEAMSTERS.	*Ds. hrs.*				
8	P. Maguire........	10 5 1/12	$2.24	2 trips, at $1.49 per trip equals.......... 2 trips, at $1.12 per trip equals..........	$2.98 2.24	$5.22
	LABORERS.					
11	M. Farraher.......	23 4½	2.00	1 trip, at $1.35 per trip equals........... 1 trip, at $1.16 per trip equals........... 1 trip, at $1.33 per trip equals...........	$1.35 1.16 1.33	3.84
19	P. J. Campbell....	20 4	2.24	1 trip, at $1.49 per trip equals.................		1.49
	SKILLED LABORER.					
28	P. J. Noone........	20 7⅔	2.56	2 trips, at $1.28 per trip equals.......... 2 trips, at $1.49 per trip equals.......... 5 trips, at $1.71 per trip equals..........	$2.56 2.98 8.55	14.09
	Total........	....	....	....		24.64

Total premium equals $3,314.80.
Total hours worked on premium is 41.24 per cent of the total time worked by all shops.

WATERTOWN ARSENAL,
Watertown, Mass., March 10, 1916.

From: Commanding Officer.
To: Chief of Ordnance.
Subject: Premiums earned during January, 1916.

1. Inclosed herewith, in duplicate, is statement of premiums earned at this arsenal during the month of January, 1916.

C. B. WHEELER,
Colonel, Ordnance Department.

Mr. BROWNE. Do you run day and night shifts, General?

Gen. CROZIER. Night shifts now only on the big tools, such as the large boring mills. Not to weary you with too much detail as to the experience of the Ordnance Department in the seven years during which we have been installing and practicing this system of scientific management, I will tell you that a good deal of our experience is set forth in Senate Document No. 800 of the last session of Congress—the Sixty-third Congress, third session; and if anyone should be interested in looking at that document, I would suggest that he would read first pages 2 and 3, inclusive, which cover the reasons for the existence of the document; that he would then read from page 33 to 60, inclusive, which give extracts from my annual reports for various years, commencing with the year 1907, which extracts state the experience of the Ordnance Department, giving an account of our experience and some of the incidents of the practice of this system. I would suggest that he next turn to page 13 and read pages 13 to 32, inclusive, which are instructive pages, in that they give reprints of certain petitions signed by employees of the arsenal, rather numerously, against the continuance of the system, mention a number of complaints in regard to it, and give also my own answers to those complaints. Those petitions, statements of complaint, and the answers to them, I think, are quite instructive; and nobody can really understand this subject unless he understands what is in those papers and the others that are quoted here. Then the reader can proceed to the final pages of the pamphlet, commencing with page 61, and read what is stated in my last report, the report for 1914, at least, which finishes out that pamphlet.

I can say now that the charges that have been made against the system as we employ it group themselves under two general classes. One class comprises complaints that some have an opportunity to earn premiums under this system and that other men do not have the opportunity. I am willing to state that it would be desirable that all men should have an opportunity to earn premiums and that we are doing our best to give the opportunity to all men and that we are continually increasing the percentage of the work which is done under the premium system. I would like to draw your attention to the fact that that complaint is a complaint, not of the system, but of the absence of it. It is a complaint that it does not go far enough; that the benefits are not extended to enough people. There is no statement, however, in the complaint that those who do not get the advantage of working under the premium system are at any disadvantage compared with their own previous state. There is no complaint that their wages are reduced or that the opportunities for earnings are reduced. Such complaint could not be supported by the facts, and it is not made. And next perhaps, as analogous to that complaint, there is one that the high-grade men are not given an opportunity to earn premiums under this system, that it is particularly a system for the advance of the low-grade worker, the man in the nature of a machine operator. I wish to state to you that that complaint is also entirely out of accord with the fact. The fact is just the other way, as far as our experience has gone in the Ordnance Department and as exemplified at the Watertown Arsenal. You will see from this document to which I have called attention that to those one or two complaints there stated the answer is given in figures. The substance of the answer is that the proportion of the high-grade men, the actual number and the proportion of them who receive the benefit of the premium system, is greater than that of the lower-grade men. In other words, the highest-grade men are benefited the most by the system as we have practiced it at the Watertown Arsenal.

I wish to add here that until this system came along we had no method, and, as far as I know, industry in general had no method, for giving these high-grade employees, who are not pieceworkers, or very rarely pieceworkers, an opportunity to increase their wages by output, as pieceworkers are ordinarily given the opportunity to increase their wages by their output. You are all familiar with the fact that many pieceworkers are either unskilled workmen or are skilled in only one particular line and operate machines which are oftentimes partially automatic and that they become very skillful in their own line and can turn out large amounts of work. And those men secure for themselves the same wages as much higher-class employees are able to earn at straight daywork. It is not at all uncommon for a pieceworker to make $3.50 a day at piecework, and it is not at all uncommon to find high-class machinists at daywork that will make only $3.50, or receive only $3.50 a day. Now, we give to these high-class machinists an opportunity, by means of time study and the premium system, to increase their pay at something like the ratio that the man of less skill increases his. I will state to the committee that this method of scientific management constitutes the first instance in which the high-grade worker is let in to a share in the advantages which come from better methods of production.

The other general charge that is made against the system is that under it men are overworked. It is all very well, it is claimed, to give men higher pay, but high pay is not worth what it costs if it wears a man out. And it is charged in general terms that our system overworks a man. That charge is almost entirely unaccompanied, as far as the Government establishment is concerned, with any specifications. Every time there has been anything like an instance of alleged overwork I have investigated it. We have never found a man at the Watertown Arsenal who has said that he was overworked. We have found one or two cases when some men have thought that other men have been overworked; but in such cases we have found that the other men would vigorously deny it. In another case, where complaint was made of overworking, a man who was called upon to operate several machines, I investigated it and discovered, as is usually the case in operating machines, that the man during the majority of the time had nothing to do but stand and watch his machines do the work; that his own efforts were called upon only during a very small proportion of his time, and even then those efforts were not strenuous. In regard to the charge of overwork it is difficult to see how a conclusion can be arrived at without an investigation of the establishment on the spot. I have tried my best to have an investigation of our proceedings made at the Watertown Arsenal. In 1911 the House of Representatives appointed a special committee which went up to the Watertown Arsenal and made an investigation, largely by an examination of witnesses. They did a minimum amount of investigation by observation in the shops. The system was then new and they found a good many men who said that they did not think that they would like it. Most of their complaints were at that time based upon apprehension, because the system was too new to have had experience with it. As a result of this investigation, that committee did not condemn anything that it stated it found at the Watertown Arsenal. It mentioned a good many represensible practices which it stated should not be indulged in, but it did not find and it not not say it had found any of those practices at the Watertown Arsenal. It ended by recommending that there should be no legislation on the subject.

I afterwards thought that I saw an opportunity for an investigation when Congress created the Federal Commission on Industrial Relations, and I asked the Secretary of War to request that commission to make an investigation at the Watertown Arsenal, and to report its conclusion therefrom with its recommendations. The commission did not investigate the Watertown Arsenal. However, it employed a committee, of which Prof. Hoxie, of Chicago, was chairman, and of which Mr. Valentine and Mr. Frey were members, which committee made a very thorough investigation of the Watertown Arsenal. But it made no report of the results of its investigation of that establishment, and did not state whether it found any practices up there which should not be indulged in, or whether it found a meritorious state of affairs. It stated nothing about the Watertown Arsenal. I was informed by Prof. Hoxie that his committee received no instructions upon that subject and had not any intimation that it should make a report upon the Watertown Arsenal, after its investigation.

So that I have not been able to secure, so far, the result of a report on the Watertown Arsenal, except the one made by the House of Representatives in 1911, which recommended that there should be no legislation. I have no doubt that many of the statements that are made to your committee and many of the statements that are made on the floor of Congress, in both Houses, are believed. I can say to you that many of them are entirely unworthy of belief, because they are absolutely incorrect, and oftentimes absolutely untrue.

When the legislation along the lines of this bill was added to the Army bill last year, the proponents of the amendment to the bill which carried the legislation made a speech in defense of it—Mr. Deitrick. Mr. Deitrick made the same misstatement in regard to the task time which is made in the preamble to this bill. He said that an attempt was made by the use of the stop watch to get the shortest time in which the best workman can perform a given piece of work, etc., and by this means to get the task time for the job. Then he makes a statement which is true, that two-thirds of the task time is then added, and that this gives the time for the job. Later on he states that the man must work faster and for this faster work the Government allows him a premium, based on the number of minutes he saves within the task time. This premium is in addition to his regular wages. Now, there is a misstatement—I do not wish to be understood as stating any statement I have just read of Mr. Deitrick's was a misstatement. They are true down to this point, except the statement that you get the shortest time in which the best workman can perform a piece of work. We do not make an effort to get the best workman; we are satisfied with any good workman. But when he says the Government allows him a premium conditioned on the number of minutes he save within the job time, the job time being determined as he says it is determined here, he is inaccurate; although I doubt not he is unintentionally so. A very substantial premium of 33⅓ per cent is given him for reaching that job time. Now, understand that job time is obtained by timing a good workman, and seeing the time in which he can do the work, the shortest time if you like, and then adding to that two-thirds, and that is the time taken then as the task time. Then in order to get the time for coming within which a man will commence to get a premium, two-thirds of that is added again, and that second two-thirds Mr Deitrick does not mention. He says he is given a premium for everything he saves within the task time obtained by adding only two-thirds to the shortest time in which it is ascertained a man can do the work.

Mr. Smith. Do I understand if a man can do a piece of work in a day, as ascertained by this investigation, that you add two-thirds to that time within which to do a piece of work?

Gen. Crozier. We add two-thirds to that time before we reach the time within which we commence to pay him a premium to do this.

Mr. Browne. Just take a concrete statement of that number of hours figured out.

Gen. **Crozier.** All right; I will give you a statement. Suppose it is ascertained by this timing process that the shortest time in which a good workman can do a piece of work is an hour and a half. Two-thirds of that time, or an hour, is then added to that time, which gives two and a half hours for doing that piece of work. Now, that is regarded as the standard time or the task time. If he does that piece of work within two and a half hours he gets 33⅓ per cent increase of his pay. Then, again, two-thirds is added to that. Taking two-thirds of two hours and a half——

The **Chairman.** Would make 250 minutes. You started with 90 minutes and added two-thirds, which makes 150 minutes, and then two-thirds of that added will make 250 minutes.

Gen. **Crozier.** Yes; 250 minutes. Now, then, for every minute he comes within 250 minutes——

Mr. **Denison.** It is 150.

Gen. **Crozier.** No; 250 minutes. We started in with 90, added 60, which makes 150, and two-thirds of 150 is 100; and add that and it makes 250. Now, for every minute he comes within 250 minutes he is paid extra for half a minute of time; and that rule—you will see by following it out—will give him 33⅓ per cent of his pay, if he makes the time of 150 minutes, and not 90 minutes, which is set down as the quickest time in which he can do the work. That is the rule that is followed. The second two-thirds which is added there is invariable. The first two-thirds, namely, the allowance over the shortest time in which it is found a man can do the work, is not invariable; but there is a substantial allowance which oftentimes reaches two-thirds.

Another statement which Mr. Deitrick makes and to which I have already alluded: He says this system increases the possibility of serious, if not fatal, injuries to the workman. That is directly at variance with the facts as ascertained and reported. He gives an instance in which he says—I will quote him:

> Only last October a painter was killed while trying to earn a few extra cents as premium held out to him by the management as an inducement to hurry with his work.

I happen to know all about that incident, because I was more or less accidentally present at the arsenal when it occurred and saw the man immediately after. The man was working on a premium job, but there is nothing whatever to connect that fact with the accident. That is a gratuitous statement, not being founded upon anything whatever in the way of evidence that would afford a reason for supposing his work on a premium job had anything to do with the accident. I can describe the accident to you. The man was working upon the roof of a building—painting the roof—and he used an appliance which is very common with painters, a long plank with cleats nailed across it to serve as supports, something like steps. This plank was laid lengthwise up and down the roof, and laid so the end of the plank was caught in the eaves—caught in the spout—so as to hold the plank from sliding down. And he moved up and down the plank and painted the roof, and then shoved it along horizontally and moved up and down again.

In one position of the plank it passed over a skylight. The plank was quite strong enough to bear his weight when he passed over the skylight, and he proceeded to pass over it, but he failed to realize that in passing over the skylight when he got to the point where the plank would not be supported under him he bore that portion of the plank down and tipped up the lower end out of the eaves. The plank then slid down, with him on it, and he fell to the ground and was injured so that he died shortly afterwards. Now, that had not a thing in the world to do with the work on the premium system, as could easily have been ascertained by inquiry, indicating that this was a reckless statement.

Another case given. He says:

> As recently as December 21 last, four days before Christmas, a young laborer, 36 years old, while piling pig lead, was killed. Although the latter was not working under the premium system at the time he met his death, the man preceding him in handling the pig lead was working under the premium system, and the evidence indicates that the careless manner in which the premium worker handled the pig lead made it more difficult, if not more dangerous, for the laborer to pile it, and not only consumed more of the laborer's time but indirectly contributed to the laborer's death.

There is no evidence that shows that at all.

The CHAIRMAN. May I ask what you are reading from?

Gen. CROZIER. I am reading from a speech of Mr. Deitrick in the House of Representatives, January 22, 1915, in support of the amendment that contained some of the legislation that is in this bill before you. I am simply taking this occasion to refute some of the statements on which I believe action of this kind has been based heretofore, and if I had a chance on each of the statements before action was taken on them I think I could have refuted all of them. This is the only opportunity I have had to refute those statements in order that the refutation might have some effect.

Mr. NOLAN. Did not you have that opportunity of submitting a statement to the committee in the Senate after the bill passed the House?

Gen. CROZIER. I did not have an opportunity to submit any statement to the Senate committee, any evidence of my own, after I saw this speech. The speech was not published until January 27, and it was too late to say anything about it before the committee of the Senate.

Mr. NOLAN. Had the bill passed the Senate?

Gen. CROZIER. The amendment was rejected in the Senate, and then was added to the bill in conference.

Now, there is another statement made by Mr. Deitrick in regard to the discharge of a foreman blacksmith, and he lays that to the premium system. The correspondence on that subject is at the disposal of the committee, if you wish to see it, which will show conclusively that this foreman was not discharged for anything that had anything to do with the premium system. Among other things, he says that the foreman stated to a workman under him that the time allowed the workman in which to complete a job was insufficient; that the job that was given him to do with one of these task times affixed to it was one that he could not do within the given time; which was an unforemanlike act. This difficulty in connection with him had nothing to do with the premium system, and he was not discharged for it; but if he made such a statement, it was an unforemanlike act.

Mr. NOLAN. What is the name of that foreman?

Gen. **Crozier.** Glynn.

Mr. **Nolan.** You covered all that and filed a statement in the hearings in the last Congress.

Gen. **Crozier.** Last year I filed all that correspondence, but it was after I filed that correspondence that this speech was made.

The petitions mentioned in Senate Document No. 800 were signed, it is true, by numerous employees. There are some letters which I have here by other employees, which speak about the same conditions and give the views of those employees, which are opposed to those of the petitioners.

When the amendment carrying similar legislation to that which is now proposed was added to the Army bill last year, in order to let the employees see what the effect would be, I gave it, by order, the same effect that it would have if it became law; that is to say, I directed that the premium payments cease at that time, except those which had already accrued. I thereupon received a petition signed by several hundred employees of the Frankford Arsenal, where premium payments were made, asking that my action be withdrawn. The petition is interesting, as it gives the ideas of those employees in regard to the premium system. The premium system, as I have said before, was established at Frankford Arsenal at that time. The petition is not very long. It has been published in the Congressional Record in connection with the debate on this subject in the Senate.

Mr. **Nolan.** Was it not also used in the House at the time there was debate on that amendment by either Mr. Moore, or some other Representative from the city of Philadelphia?

Gen. **Crozier.** I do not know, Mr. Nolan. I do not think it was, but perhaps I am not quite accurate in regard to this particular petition. It is dated January 28, and it could have been used in the Senate. It could have been used in the House, too. Here is the petition:

PETITION.

Frankford Arsenal,
Philadelphia, Pa., January 28, 1915.

Chief of Ordnance, United States Army,
Washington, D. C.

Dear Sir: We, the undersigned employees of the Frankford Arsenal, do respectfully enter our protest against the instructions received from you yesterday suspending all premium payments at this arsenal. We have been informed that your action is based upon legislation contained in the Army bill recently passed by the lower branch of Congress, and that therefore your action is out of respect for the views expressed by that body. Our reasons for protesting are as follows:

1. The premium system of payment was established in the manufacture of small-arms ammunition about five years ago, and that there was a complete understanding between ourselves and the management of the arsenal that there would be no reduction of the premium rates while the manufacturing processes remain the same. This agreement has been lived up to by the management and by ourselves and to the mutual satisfaction of all concerned.

2. We believe that this system has been eminently successful, because, according to published reports, the manufacture of small-arms ammunition at Frankford Arsenal presents a decided economy when compared with costs of the same ammunition procured from private manufacturers.

3. The premium earned by all the employees engaged in the manufacture of small-arms ammunition during the month of December, 1914, has amounted to $3,747.72, or to approximately $45,000 for the year, and therefore the abolishing of the premium system means an annual loss to us of approximately $45,000.

4. Many of us, based upon the premium system of competition, have obligated ourselves to purchase homes, and if the premium rate is abolished it means the loss of our homes to us.

5. It is very probable that the branch of Congress which passed this legislation has in view the interests of the employees, but we beg to differ on this very point. While the legislation prohibits rewarding us for our increased efforts which we give to the Government it does not prohibit an officer or foreman from requiring us to work just as hard as we are now working and for very much less compensation. The power of your authority and that of your officers and your foremen to make us work harder has not been lessened by this legislation, but you have been deprived of the opportunity of paying us for such increased work as you may give us to do.

We therefore ask you to submit this petition to the Secretary of War, with the recommendation that he transmit it to Congress for consideration, and we hope favorable action.

Respectfully submitted.

[First indorsement.]

ORDNANCE OFFICE, *January 30, 1915.*

To the SECRETARY OF WAR:

1. The legislation referred to in this petition is contained in a proviso of the Army bill, H. R. 20347, which passed the House of Representatives on January 22, and is now pending in the Senate. The language referring to the class of payments which have been suspended at the Frankford Arsenal is as follows:

"* * * * nor shall any part of the appropriations made in this bill be available to pay any premium or bonus or cash reward to any employee in addition to his regular wages, except for suggestions resulting in improvement or economy in the operation of any Government plant; and no claim for services performed by any person while violating this proviso shall be allowed."

2. As the legislation is claimed by its proponents in the House of Representatives to be in the the interest of the workmen who would be affected by it, I have considered it but just to all such workmen that they should have warning as to the effect of the measure in case it should be enacted into law. I have therefore given the same effect to the prohibition that it would have if it become law by directing that all premium payments, except such as have already accrued, shall cease at the arsenal.

WILLIAM CROZIER,
Brigadier General, Chief of Ordnance, United States Army.

Mr. DENISON. Who prepared that?

Gen. CROZIER. That is an indication of what those people thought. I have a number of other letters here from individual employees which I will not take the time of the committee to read. They also have been published in the Congressional Record in connection with the debate in the Senate, and they can be found there. They indicate that some of these employees are not afraid to come out and state their views in regard to the system; and it is their belief that many of their fellow employees think as they do, but are afraid of the discipline, or something else which they apprehend, from labor organizations. They are therefore unwilling to be known as favoring the premium system.

With reference to the second section of this bill, which makes it an offense to do either of the things prohibited in the first section, the offense being punishable by fine or imprisonment, I desire to call attention to the fact that the section makes it a very dangerous matter for any officer of the Government to follow any of the methods of efficiency which have anything to do with a stimulus to increase output which results from increased compensation. Also, it makes it dangerous for any officer of the Government to ascertain by any kind of a study in connection with time systems anything with regard to improved methods of doing work, or to inform himself in regard to the time which such work should occupy. Of course, Government officers can not be expected to run risks under such legislation as this, and with the enactment of the legislation all the efficiency which could result, and which has resulted from the attempts by payment to stimulate a good intention to work, and from the attempts by any timing operation to improve the methods of work, would be lost to the Government.

As an illustration of one of the difficulties encountered in connection with the legislation, section 1 of this act provides that no time study shall be made of any job of any employee between the starting and completion thereof. At once there arises the question, What is a job? I have had that question up before me already. It says, "between the starting and the completion thereof" we are forbidden to take time; but that does not forbid taking the commencement of the job and taking the end of the job, as I read the language. Suppose a man is making articles by a repetition process, and he goes on making these articles day after day and week after week, and perhaps month after month. What is the job? Can we, under this law, measure the time of making a single article? Suppose the article requires more than one operation for its manufacture. Suppose it is something that is made on a lathe. Suppose it is a piece of material that is turned down to a given diameter and then faced off. Is the completion of that one article of a number a job or not? Or, can the only thing which it is lawful to time be considered the completion of a number of those articles; and if so, what is the number, when the work goes on continuously? That question has been raised, and I have been asked to decide in just such a case whether it is lawful to time the completion of a single piece. I am sure it is a very difficult matter to decide, and if the liability of the superintending officer or foreman to fine or imprisonment depends upon the right interpretation of the statute you may be quite certain that there will not be much risk taken.

The question also comes up—and it has come up before, and we have spoken of it in this connection—what is a premium? Can we pay people on a piecework system? The only difference that I can find between the two systems is that the premium system is more advantageous to the workman in that it has a low limit of pay, while the piecework system has no such limit. Who is going to risk fine or imprisonment on such a distinction as that?

When this legislation was under consideration in the Senate last year there was considerable discussion as to what constitutes a premium and what constitutes piecework. One Senator said there was very little difference between them. I think there is very little difference. Senator Hughes, of New Jersey, who was speaking in favor of the legislation, declared there was a great difference between them, and that there would not be any objection to piecework, although there was every possible objection to premium work, the premium system being iniquitous, while the piecework system was not subject to that charge. At any rate, it was not forbidden by this legislation.

It is probably known to you all, because there is plenty of evidence of it, that organized labor, which is exerting itself to secure the passage of this legislation, is hostile to piecework, as well as to premium work. Here is a circular [indicating] which made its appearance at the Frankford Arsenal. It is signed "Executive committee, Federal Lodge, No. 687, I. A. of M.," which, I take it, means International Association of Machinists. With your permission I shall read it:

FRANKFORD ARSENAL EMPLOYEES, CAN YOU STAND FOR PIECEWORK?

FELLOW WORKERS: The Congress which adjourned March 4 passed a bill which prohibited the use of any money appropriated for the Army being used for the maintenance of any so-called speed system.

Hardly two months have passed before the officials began to inaugurate the piecework system, which, if not breaking the law direct, is at least breaking the spirit of the law, and they propose to start piecework and not guarantee you a day rate; furthermore, they are cutting the rate you had under the bonus system.

Now, fellow workers, organized labor has fought this system for years, and intends fighting against its being placed in the arsenal. Will you sit still and let a few give up their time and money, or will you come in and help? Again, the officials, in the face of hard times, sublet contracts and caused a lay off, and their excuse is that the work "could not have been done advantageously" at the arsenal.

Now, they have in the Frankford Arsenal the best mechanics that can be found anywhere and the latest improved machinery, and if they can not turn work out "advantageously" it must be up to the management of the arsenal, yet we are the ones that always suffer; yet they boast of saving $1,200,000 last year, and already in one department of the arsenal $200,000 this year. All this saving, and could not "advantageously" give you the work.

Now, it is up to us men. Come. get together and help organized labor to assert our rights and fight these conditions, for it is only through organized effort that we can accomplish anything.

EXECUTIVE COMMITTEE,
FEDERAL LODGE, NO. 687, I. A. OF M.

In the report of the proceedings of the thirty-fourth annual convention of the American Federation of Labor, at Philadelphia, November, 1914, there is found this resolution. It is resolution No. 20, by Delegate E. J. Aspengren, of the Rock Island Tri-City Federation of Labor.

EXTRACTS FROM REPORT OF PROCEEDINGS OF THE THIRTY-FOURTH ANNUAL CONVENTION OF THE AMERICAN FEDERATION OF LABOR, PHILADELPHIA, NOVEMBER, 1914.

Resolution No. 20, by Delegate E. J. Aspengren, of the Rock Island (Ill.) Tri-City Federation of Labor.

Whereas the United States Government, in its arsenals and navy yards, has installed the piecework system in certain departments; and

Whereas this system is a menace to the worker in all trades and occupations through its vicious effects, viz, reduction of wages, increase in production, and the development of distrust and brutality among the workers, to the extent that it is almost impossible to organize those employed under this system: Therefore be it

Resolved, That the American Federation of Labor, in regular session assembled, condemn the use of the piecework system on Government work; and be it further

Resolved, That President Gompers and the executive council be instructed to use every means at their command that legislation may be enacted that will forever exclude the piecework system from all Government establishments.

Your committee congratulates the executive council upon the progress which has been made during the last year in uncovering the evils attendant upon the so-called Taylor system of scientific shop management, and recommends that the executive council continue its efforts to have a measure enacted which will prevent the operation of any system of shop management which includes the use of stop watches in connection with workmen's labor, or the application of any system of payment of wages adopted for the purpose of speeding up workmen, and the elimination of such system wherever it exists.

The report of the committee was adopted. (See p. 326.)

Mr. NOLAN. Do you know whether that resolution was adopted?

Gen. CROZIER. It is stated that the report of the committee was adopted. It says, "See page 326."

Gentlemen, I do not know that I need tell the committee that I have not interpreted this legislation as it was attached to the Army bill last year as forbidding piecework in the arsenals and payment in accordance therewith; but I was obliged to resort to piecework in some cases where I had been paying in accordance with the premium system. Those employees at the Frankford Arsenal who signed the petition which I have just read to you were afterwards paid on piecework. That was somewhat technical. It was taking advantage of what the law permitted in order to give payment in accordance with the output, but it escaped the definition of premium. I may add that the comptroller has passed upon that, so that we were within the law in accordance with his interpretation. As it was a financial matter—the law only stating that none of the money should be expended in premium payments—all we needed for our safety was the opinion of the comptroller. However, when it becomes a criminal matter, punishable by fine and imprisonment, the opinion of the comptroller is not a sufficient safeguard, and I should not direct any officer, with such a thin sheet of ice between him and fine or imprisonment, to follow the piecework system of payment.

All the efficiency that you get from piecework would disappear. It is very great, because that system of payment has been in operation in Government establishments for many, many years—50 years or more; and a great deal of the work is done in accordance with that system, which does not differ in principle in the least degree from the premium system, which is forbidden by this proposed legislation, and which is forbidden in the legislation in the Army bill.

A charge which has been made against scientific management is that it has for one of its objects the employment of unskilled or slightly skilled men in the work heretofore done by skilled tradesmen. With regard to that, I will say that it is well known that that practice long preceded the introduction of anything that is called scientific management. We have been doing it for years. We use it at the Springfield Armory to make rifles. The rifle is not made to-day by one skilled gunmaker. For years we have been making that rifle by using a number of skilled men, each one of whom performs one operation. Then the rifle is afterwards assembled, so we do not have skilled gunmakers who make all parts of the rifles. The result is that we get a much better rifle and a very much cheaper rifle; and we have raised the average pay of that class of persons very considerably. There are just as many highly paid persons as before. We need skilled foremen, skilled assemblers, and so on. And we have given many other people a chance to make the high wages of machine operators giving a large output.

I could use all the time that the committee has to devote to the subject, and a great deal more, in bringing up objections which I have heard, and then knocking them down.

Mr. KEATING. The method pursued by the committee has been this: Witnesses are permitted to make their statements and then members of the committee ask questions. When you have concluded your statement, some of the members may have questions that they desire to ask.

Gen. CROZIER. I do not think it is necessary for me to go any further with this statement. I have indicated the sources of a great deal of information, and those sources are, of course, at the disposal of the committee. I have appeared before the committee myself on a previous occasion and I do not care to repeat what I said then, although the membership is probably somewhat different. I shall be glad to answer any questions that anyone may care to ask.

Mr. DENISON. How many men, General, are working under the time system now?

Gen. CROZIER. There are none working under the time-study system, because we have been forbidden to make time studies. Under the premium system there are about 600 men who are subject to it at the Watertown Arsenal.

Mr. DENISON. Are there any at any place else in the Government service that you know of?

Gen. CROZIER. No; because Watertown Arsenal and Frankford Arsenal were the only ones at which I had established premium systems of payment, although piecework was in practice at a number of other arsenals. When the legislation of last year was passed I was forbidden to use the premium system with reference to any work which was paid for from the appropriations made in the Army bill, but I was able to use for it funds appropriated in the fortifications bill. I continued that system at the Watertown Arsenal as to those men who were engaged in work that was paid for from that bill.

Mr. DENISON. Have you had any complaints from the men themselves on account of the system?

Gen. CROZIER. Yes, sir; I have had a great many.

Mr. DENISON. I do not care to have you go into it fully, but what is the ground of the complaints, briefly?

Gen. CROZIER. One that I mentioned was that high-grade men did not have a chance to earn premiums, and that the low-grade men were the ones who benefited. That is absolutely refuted by the facts. I have a list right here of a number of complaints. Another was as between the workmen of the same grade, that one would get an opportunity to earn a premium while another would not be given a premium job, but would simply be given his work on a day rating. While we would like to avoid that, and are trying to avoid it, and are avoiding it more and more all the time, I think that is what is behind a great many of these complaints. I think that these workmen have been urged to believe—a great many of them, at least—that if this premium system could be abolished they would be able to secure the same rate of pay as they do under the premium system, but as straight day pay, without having to reach any given output. Many complaints have been presented to me accompanied by the statement that if I would give a 25 per cent increase of pay and leave it to the workmen, they would turn out as much work as before. That I could not expect, however, because the record shows how much the output was increased when I made the change the other way.

Mr. DENISON. If this bill becomes a law, what effect will it have upon the establishments over which you have control?

Gen. CROZIER. If it should become a law in the form in which it is before you, I think it would have the effect of abolishing all time study permanently, which is abolished now only temporarily. It would abolish all premium work and all piecework; and the effect of that would be, I should say, that the labor cost of a great deal of the work which we are doing would be at least doubled.

Mr. DENISON. Has organized labor made a formal objection to this efficiency system that you know of?

Gen. CROZIER. Yes, sir. If you will look at the congressional document to which I invited attention a moment ago, which is No. 800, you will find on page 40 the first formal objection that was made to this system. That has been followed up by numerous other objections. This first formal objection consisted of an official circular addressed by Mr. James O'Connell, international president of the International Association of Machinists, to the order everywhere, and forms an attack upon the system as we have it in practice, and calls upon the members of the association, among other things, to instruct the secretary or committee to immediately write to the Secretary of War, "to the two United States Senators of your State, and the Congressman from your district," protesting against the installation of the Taylor system by the Government, and asking the lawmakers to support any measure which might be submitted to secure this result. That circular was, of course, spread about among the employees of the Watertown Arsenal, and I think constituted the first incitement of those employees to dissatisfaction with this system. Before that it had been going on with the same appearance of cheerfulness, acquiescence, and cooperation that exists now in a higher degree than at any time before we introduced this system. This is denied, however, by the statements which come from outside the arsenal.

Mr. DENISON. As a result of this system, have you had a chance to observe whether or not there is a decrease in the vitality of the employees, and whether it has an injurious effect upon the laborers themselves?

Gen. CROZIER. It has not, in the least. As I said a moment ago, the records show that the percentage of accidents among the premium workers is less than among the dayworkers. I do not wish you to misunderstand the statement I made to the effect that the complaints come from outside the arsenal. They also come from within the arsenal, quite numerously signed; but the point I want to make is that I think they are incited from without. They are entirely out of accord with the spirit at the arsenal, as is apparent to anyone who is familiar with the daily affairs of the arsenal.

Mr. DENISON. Does the application of the system result in eliminating men or shifting them?

Gen. CROZIER. We have a great deal of shifting of the men. We have not discharged any man as a direct result of the system. We have never discharged a man because he could not come up to the system. There was one case where a man had difficulty, and indicated a temporary refusal to work under the system, and who during the course of the interview that was going on in connection with the work discharged himself. In other words, he left the employ of the arsenal when he had not been discharged. Some one may have told him that he was going to be discharged, but he was informed beforehand that he was not discharged. He afterwards tried to get reinstated, but we would not reinstate him. When he left, however, there was no necessity for his leaving.

Mr. Denison. General, what is your judgment, speaking with reference to these men, as to whether or not this system will result in decreasing their vitality and health?

Gen. Crozier. I do not see the slightest reason why it should. You must remember, Mr. Denison, that the effort which is made is only to ascertain what a workman can do reasonably, or can be reasonably expected to do. In that respect it constitutes a safeguard, because without the system, in any effort to establish tasks, I do not see that we can do anything but resort to the pacemaker. If you have an employed pacemaker, he may be an exceptional man, and he would furnish the only standard you would have to go by in forming your expectation as to what a man should do. Even under this legislation this kind of process would not be forbidden. I can have a pacemaker, who can be paid high wages. He would turn out a great deal of work, and I could say to every employee, "You will have to turn out as much as that man or leave the establishment." There is nothing to forbid that, although it might be a cruel process. I do not say that I would do that, but I would be permitted to do it.

Mr. Denison. Let me ask this question: Do you think that the enactment of this law, if it should be enacted, would result in any embarrassment to the Government or in any decrease in its ability to meet the situation in case we should become involved in a war?

Gen. Crozier. I think it would have a great influence on it.

Mr. Denison. Will you state why?

Gen. Crozier. Because in that case we would have, in the first place, no accurate knowledge of what a day's work should be, what the output of a workman should me, or what we should require him to do, or what we should tell him would be a good day's work. We would have inadequate means to detect soldiering, if it should exist, and we would not have any way to stimulate the men, except by an appeal to their patriotism, which, I have no doubt, would be effective in many cases. I will have to add, however, that the appeal would not be effective in many cases.

Mr. Denison. In time of war, do you happen to know whether it is customary or necessary to appeal to men for extra effort in this line of work?

Gen. Crozier. Well, the most prominent example we have had has been in Europe recently in connection with the war. We are informed by the statement of the minister of munitions that at times the indisposition of some of the men working under the rules of the trade organizations to give such output as they could give has been a serious threat to England in her efforts in the war, and he has made very strong appeals to the labor organizations to suspend these rules during the war, I believe, with a great deal of success. I understand from his statement, or from his reports coupled with his statements, however, that he has not achieved complete success when he has secured the cooperation of the leaders of organized labor, because in some instances the men who have been trained in accordance with these ideas of the limitation of output have found other leaders, perhaps temporary ones, behind and under whom they have fallen in and have continued the practice of limitation, even contrary to the advice of the regularly constituted leaders; so that the harmfulness of inability to determine what work should be done and to apply at least the ordinary stimulus of reward and the harmfulness of the loss of knowledge of what the output should be, or how to ascertain it, has so many different aspects that I am afraid it would be a hopeless task to attempt to present them all to you.

Mr. Denison. You think the practice of giving bonuses or premiums would be desirable in order to secure an increased output in case of emergency, such as a war?

Gen. Crozier. Yes, sir; I think it is desirable in that case. I think that in time of war men can be expected to work right up to their limit. I do not believe it is possible to get them to do that without a stimulus involving an increased reward. I am aware of the view that inasmuch as soldiers go to the front and not only make the best efforts that they are capable of, but also incur great danger, it is no more than reasonable that the men should back them up in the workshops by putting forth their own best efforts. It is true, of course, that the soldier is getting very little pay. I do not believe it is possible, however, to get those best efforts in the shop without a stimulus involving reward in a great many cases. I will say, though, that I believe it is possible in a great many cases to get it by simply appealing to a man's higher nature.

Mr. Smith. A great many factories are now being operated by women, are they not?

Gen. Crozier. Yes, sir.

Mr. Smith. Is it necessary to have this stimulus in case the factories are operated by women?

Gen. Crozier. I am not informed about that. A very interesting document has been published showing the extent to which women are employed. I am astonished at the size of the work that is handled by them. I notice that they machine 6 and 7 inch projectiles which weigh 200 pounds or more. As to the particular means of stimulating them to effort I am not informed; but I have read other documents published by the British Government which have indicated a necessity not for stimulating those women but for holding them in check, so that they would not injure themselves by overwork.

Mr. Smith. Don't you think you could get a factory to a high state of efficiency without the stop-watch system?

Gen. Crozier. I think we could not reach a high state of efficiency without that.

Mr. Smith. In the present state?

Gen. Crozier. I do not believe I could have gotten Watertown Arsenal up to its present state of efficiency without using the stop watch or some other equivalent time-measuring device.

Mr. Smith. Do you use the Taylor system there?

Gen. Crozier. Yes, sir.

Mr. Smith. When was that established?

Gen. Crozier. It was begun about seven years ago.

Mr. Smith. You had been connected with the factory before that?

Gen. Crozier. Yes, sir. The output was very much less than it has been since its establishment.

Mr. SMITH. You have improved the output?

Gen. CROZIER. Very much; yes, sir.

Mr. NOLAN. Gen. Crozier, can you give us information as to how that petition was circulated at the Frankfort Arsenal?

Gen. CROZIER. It was circulated in the same way that any petition might be circulated in the interest of employees.

Mr. NOLAN. Do you know whether it was drawn up in the office, or by any of the officials of the Frankfort Arsenal, or by the employees?

Gen CROZIER. I know it was not done at the instance of the officials of the arsenal or anybody on that side. Some assistance may have been given in the wording, so as to have it in a form to express what the employees wanted to say. I think that is likely.

Mr. NOLAN. Is that the general custom in the ordnance department when employees are petitioning Congress either for or aganst legislation? Do the officials assist in the preparation of petitions?

Gen. CROZIER. That has been done in several other cases that I remember. In some cases I know also that it has not been done.

Mr. NOLAN. What other cases have you in mind where they got assistance from the officials in preparing petitions?

Gen. CROZIER. There is one case that I remember now, which related to legislation which was added, I think, to the legislative, executive, and judicial bill of 1912, which practically forbids the promotion of an employee for increased efficiency; excepting, however, artisans and laborers. It applies to such men as draftsmen, clerks, chemists, and engineers. This legislation runs something like this: It forbids the payment from any lump sum appropriation of any higher salary than had been paid the year before for the same or similar work, and its application is, for instance, to prevent the promotion of a clerk who might be taken on, new, at a low salary to perform a given kind of work, and who might so improve in the following year that he could do twice as much. Such a clerk could not be promoted under that legislation. The only way would be to assign him to some other kind of work, if you had some other kind to which you could assign him. It would also prohibit the promotion of a chemist to take charge of a laboratory at a salary which we would be willing to pay, if he developed into a good, capable man, fully competent to take charge of the laboratory, after having been taken on in charge at a lower rate.

At the Frankfort Arsenal this last year—the same place this other petition came from—the employees of the class affected got up a petition setting forth their case in greater detail than I am telling it. They petitioned for a change of the law in the respect in which it bore hard upon them, and that was a petition in which they were assisted in the preparation by the management, and it was forwarded through the management to me in the regular way.

Mr. NOLAN. Do you know whether the management of the arsenal called their attention to this legislation?

Gen. CROZIER. I called it to their attention. Do you mean this legislation with which this petition that I have filed is concerned?

Mr. NOLAN. Yes.

Gen. CROZIER. I called it to their attention.

Mr. NOLAN. That is the only other instance you recollect where that limitation was put in the legislative bill in the shape of a rider in 1912? That, by the way, did not prohibit promotion, but it prohibited the raising of salaries under the lump-sum appropriation. If you can find a place for an employee in a higher grade, he can go to the top, or you can promote him.

Gen. Crozier. But in another kind of place. I can not promote him because of increased efficiency in his own grade.

Mr. Nolan. Yes; you are limited by that legislative rider.

Gen. Crozier. You asked me if I remembered any other case. One did come into my mind just as you were speaking. The law in regard to the leave of absence of employees in the Ordnance Department grants each and every employee 15 days' leave of absence each year. That law has been held by the comptroller to be a limitation as well as a grant. It was passed in the interest of the employee, and, in my opinion, it is a very good law. It has a defect, however, to which I shall call attention in a moment. Operating as a limitation, we are forbidden to give more than 15 days in any one year to an employee of my department, among others. The law, I suppose, when it was enacted, was intended to apply only to the continental United States, although it was passed after we had taken possession of the Philippine Islands. In the Philippine Islands and elsewhere in the Tropics, owing to the different conditions of employment and living, it is customary to grant to employees of the Government more than 15 days' leave of absence, but I am forbidden by that law to grant more than 15 days to them as well as to employees in the United States. Now, the employees affected in Manila got up a petition asking for a change in that law, and they were assisted in the wording of that and in getting it before the proper authorities by the officers.

Mr. Nolan. In those two instances that you speak of, outside of the one petition you have presented here, the legislation affected the official force outside of the mechanical department, did it not?

Gen. Crozier. In the last case I spoke of it affected all the official force in the mechanical department and outside. In the first case, the law as it was passed first affected both classes of employees, but afterwards, by subsequent legislation, the artisans and the mechanical department were relieved from the operation of the law.

Mr. Nolan. In this legislation regarding the Taylor system, it affected only the mechanical force and did not affect the office force at all; is that correct?

Gen. Crozier. That is true in accordance with our practice; but these methods might be applied to the office force, I have sometimes thought, with a great deal of advantage, but we have never done that.

Mr. Nolan. In regard to that order that you issued while this legislation was pending, can you give the exact date of it?

Gen. Crozier. It was somewhere about the 26th or 27th of January, 1915. My recollection is that I issued it as soon as the legislation was attached to the Army bill in the House of Representatives.

Mr. Nolan. On the issuance of that order, did that order carry with it, besides a suspension of the bonus and premium system, an understanding that the employees going back to their original wages would have to do the same work as they had done under the bonus and premium system.

Gen. CROZIER. No, sir; there was no understanding to that effect, and some did not continue to do the same amount of work.

Mr. NOLAN. There was nothing in the orders given by the superior officers over there, after receiving that order from you, that they would have to perform the same amount of labor?

Gen. CROZIER. Not to my knowledge. If anything of that kind had come to my knowledge I would have forbidden it. There was one case that came to my knowledge afterwards, where a man was engaged on premium work when the order came, and he slowed down to such an extent that his work was only one-fifth of that which he had been doing before in the same time.

Mr. NOLAN. I understand a statement was made when the order was issued that while the premium and bonus system would not be in effect the men would be compelled to do the same amount of work.

Gen. CROZIER. I do not think that was the case.

Mr. NOLAN. We understood that an order was issued to that effect.

Gen. CROZIER. If that were true and I had known of it I should have caused it to be rescinded at once. I will say here, as bearing on the general subject, that I do not believe it is right to expect a man to turn out as much work at a day wage as he will turn out under the stimulus of a premium or bonus system of payment. I think that the regular system of wages which has been arrived at through long experience is the equivalent of the ordinary day's work. I suspect that they balance each other pretty well. When you want more work you should give more pay.

Mr. NOLAN. Did you understand at the time this measure was pending before the House in the last session that you would be compelled to stop the payment of premiums and bonuses; that is to say, where you had set a task, that you would be compelled to stop the bonus or premium system, and that this bill would be retroactive?

Gen. CROZIER. I did not think that. I did not think the order was retroactive. I forbade the payment of premiums, except such as had accrued at the time of the receipt of the order.

Mr. NOLAN. In other words, you prohibited any further effort on the part of the officials of the Frankford Arsenal to pay a bonus or a premium from that day on?

Gen. CROZIER. Yes, sir.

Mr. NOLAN. Why did you issue that order at a time when this proposition had not become law?

Gen. CROZIER. Because I wished the employees to understand what they were threatened with. I wanted to get before them, by practical experience, what was going to be their lot if this legislation were passed.

Mr. NOLAN. Didn't they have that experience before you introduced that system?

Gen. CROZIER. They had had it a long time before.

Mr. NOLAN. How long before?

Gen. CROZIER. I introduced the premium system at Watertown Arsenal in 1911. I introduced the Taylor efficiency system in 1909. It went on for two years before we started the premium system.

Mr. NOLAN. As I understand it, this petition came from the Frankford Arsenal. How long had the bonus and premium system been enjoyed over there?

Gen. Crozier. I can not say, for the reason that the Frankford Arsenal, like the Springfield Arsenal and the Rock Island Arsenal, is an establishment where that kind of payment had been going on for many years. I had not employed at that time in those places any systematizer or expert in shop management, with reference to the introduction of such a system. As Watertown Arsenal was one where there had been no piecework, I did employ a systematizer, so that date is more distinctly in my mind. The Watertown Arsenal does not lend itself to piecework payment.

Mr. Nolan. Do you think it is proper, Gen. Crozier, for a man holding your high position in the Government service to issue an order of that kind for the purpose of working up the employees, if I may use that term?

Gen. Crozier. I think it is not only proper, but I think it is my duty to inform the employees who are concerned of anything of that kind which it is pending, and how it is likely to affect them.

Mr. Nolan. Is there not a distinct difference between informing them of the effect of the legislation and putting into effect through an order the force of such legislation before you knew that Congress was going to adopt it?

Gen. Crozier. There is a difference, of course. By putting that order into effect I showed what would happen if Congress adopted this legislation, further than to merely inform these people. You must certainly know that to inform people of something which is impending in the future and may arise is not nearly so effective a way of making them thoroughly aware of what is involved as to put it into effect at once.

Mr. Nolan. Following this out to its logical conclusion or its last analysis, suppose any officer of the Army should put into effect an order that affected the enlisted men while legislation was pending in Congress that would prohibit a certain system being abolished—a system that had been installed by Army officers—what effect would that have on the discipline of the men in the Army and on the entire establishment?

Gen. Crozier. It might have a good effect. I would not be certain that it would have a good effect unless I knew the case.

Mr. Nolan. Is it good policy?

Gen. Crozier. In this particular instance I think it was good policy, although it did not accomplish what I hoped it would. This legislation was conceived, or was said to be conceived, in the interest of the employees. I wished to let them see whether it was in their interest or not, and a great many of them thought it was not.

Mr. Nolan. You purposely put it into effect for the purpose of creating opposition to the amendment?

Gen. Crozier. I put it into effect for the purpose of letting them see how it would affect them.

Mr. Nolan. And for the purpose of causing opposition to it?

Gen. Crozier. I thought it would have that effect in some degree.

Mr. Nolan. You thought so?

Gen. Crozier. Yes, sir.

Mr. Nolan. At the Watertown Arsenal?

Gen. Crozier. Yes, sir; to a certain extent.

Mr. Nolan. As a general proposition, did it have the same effect at Watertown Arsenal, where the entire time system had been applied, and not part of it? You said, as I understood it, that the stop-watch system had not been introduced at Frankford, but at Watertown?

Gen. CROZIER. Yes, sir.

Mr. NOLAN. That, as I understand it, is the most objectionable feature of this system. Did it have the same effect at the Watertown Arsenal as it did over there?

Gen. CROZIER. No, sir; it was not so extensive.

Mr. NOLAN. I am going to ask now in regard to Watertown. Do the officials at the Watertown Arsenal give the employee consideration by consulting with him regarding the amount of bonus or premium to be paid?

Gen. CROZIER. No; they do not. The rule under which a bonus or premium is paid is well understood, and all employees who apply at the Watertown Arsenal for work are informed that that system is in operation there when they apply, so that they come to work under the system with a full knowledge that it is in operation.

Mr. NOLAN. Then the system itself determines the bonus or premium to be allowed to the employee and the employee has no voice in the matter at all?

Gen. CROZIER. He has just the same kind of voice as he has in his wages. The employee is only asked with regard to his wages when he comes there, if he is willing to go to work for a certain sum. That is the only question he is asked.

Mr. NOLAN. He knows when he goes to work what his day rate will be and what rating he will have?

Gen. CROZIER. Yes, sir; he knows when he goes to work.

Mr. NOLAN. And he generally knows pretty well all the ratings in the arsenal when he goes there?

Gen. CROZIER. Yes, sir.

Mr. NOLAN. After he goes there you place him under this system in all its phases. Do you then give him any voice in the matter of determining the amount of bonus or premium he may receive over and above his day rate?

Gen. CROZIER. That is to say, do we tell him, when we give him a job of work, and give him the time in which it can be done, or the time in which he is expected to do it, that he will be given so much more if——

Mr. NOLAN (interposing). Do you consult with him as to what is a reasonable bonus or premium and as to whether or not it is satisfactory to him?

Gen. CROZIER. No, sir. He is privileged, if he chooses to do so, to say that the time is too short, and that he can not earn that premium in the given time. They oftentimes do say that.

Mr. NOLAN. Some one made a statement here to that effect the other day, and said that it was a general condition that the employees were consulted. I wanted to know if that was the situation at Watertown Arsenal.

How long after the installation of the system at Watertown Arsenal did the strike of the molders take place?

Gen. CROZIER. The time study and premium system of payment, as I remember, was introduced at the Watertown Arsenal in May of 1911. It was commenced in the machine shop. I think the strike of the molders took place in August, 1911, when it was first attempted to establish the time study and premium system at the foundry. I think it was in August, but it may have been in July.

Mr. NOLAN. Do you know, of your own knowledge, whether these men were told to strike by their officers, or were encouraged to strike by the officers?

Gen. CROZIER. Do you mean by the officers of the arsenal?

Mr. NOLAN. No; I mean of the International Molders Union?

Gen. CROZIER. I understood in regard to that that the men, or their representatives, inquired of the officers of the central organization whether, under the circumstances, they would be permitted to strike, or whether their strike would be authorized; and they received an affirmative answer. My belief is—it has been quite a while now—that they were not directed to strike by the central organization.

Mr. NOLAN. You mean the molders' organization?

Gen. CROZIER. Yes, sir.

Mr. NOLAN. I want to make it clear here, because I happened to be one of the officers, and probably knew as much about it as anyone, that they had absolutely no authority, as members of the molders' union, to strike. The members of the molders' union are not authorized to strike until they get the sanction of the international union.

Gen. CROZIER. That is what I understood, and our understanding is in perfect accord so far. Perhaps I have not the right to ask the question of you, but I should like to know this: Is it certain that the organization did not tell them to strike, but did authorize them upon application?

Mr. NOLAN. The application was never received. It was an independent strike, and independent strikes are not recognized under the laws of the organization. I wanted you to be clear on that, because we were not clear when you were here before.

Gen. CROZIER. Did you say that I was not clear about it when I was here before, or that the committee did not understand it?

Mr. NOLAN. What effect upon the production of the Watertown Arsenal has this legislative rider or amendment attached to the last Army appropriation bill had during the time intervening since July 1, 1915?

Gen. CROZIER. I think it has had little, if any, because it is not applicable at the Watertown Arsenal. The rider was not applicable at the Watertown Arsenal, or was applicable only to a very slight extent, because the work done at the Watertown Arsenal is not done with funds appropriated in the Army bill. There are a few teamsters up there engaged in hauling for shipment, and they are paid while they are doing that work, by the Quartermaster's Department. Their pay has been cut down, because it is impossible to pay premiums; but most of the work at the arsenal is prosecuted with funds provided by the fortifications bill.

Mr. NOLAN. Regarding those teamsters, were they enjoying a premium or bonus system prior to the passage of the act?

Gen. CROZIER. I think they were, because their pay was cut down.

Mr. NOLAN. Why was it cut down, if this did not affect it?

Gen. CROZIER. Those teamsters were doing work connected with the transportation of the Army, and that is under the Quartermaster's Department, and is paid for out of funds appropriated by the Army bill. Therefore the payment of their premiums was forbidden.

Mr. Nolan. Well, why were these men cut down when they were getting a certain amount of money prior to the passage of the act?

Gen. Crozier. For all that they did prior to the passage of the act they were not cut down, except during the period of suspension.

Mr. Nolan. But, if they were doing a certain task prior to the passage of the act, this legislation did not affect them?

Gen. Crozier. These men, like all other men, had a day rate of pay, and for doing a certain amount of work in a certain ascertained any prescribed time they were given premiums above that pay. As the payment of those premiums from funds appropriated in the Army bill was distinctly forbidden, it would have been unlawful to continue them.

Mr. Nolan. Is it your understanding that if a man was enjoying a bonus or premium which was really his day's pay, that he was affected by that legislation?

Gen. Crozier. Any man who was enjoying a bonus or premium that was paid to him for work he was doing was affected by that legislation, if he was paid out of funds appropriated in the Army bill.

Mr. Nolan. You say that most of the work comes under the fortifications appropriation?

Gen. Crozier. At the Watertown Arsenal; yes, sir.

Mr. Nolan. You have still continued the stop watch and time study up there?

Gen. Crozier. Not the time study, because the officers who would direct this are paid out of the Army appropriation bill, and they can not direct any more time study.

Mr. Nolan. In the employment of a pacemaker, such as you spoke of a while ago, which method you seemed to consider the Government entitled to substitute for the other system, you stated that you would pay a high rate for setting a pace. Would you pay the other man who would do the same amount of work as the pacemaker the same amount of money?

Gen. Crozier. I would not follow that method at all. I would not set a highly paid man to establish a rate for everybody else to reach or be discharged.

Mr. Nolan. Let us eliminate the term "pacemaker." Suppose you employed a first-class man and told him to do what you considered a reasonable day's work and paid him what you thought he was entitled to get for that day's work, would it be your idea that the Government would pay the other men the same amount that he enjoyed, provided they did the same amount of labor?

Gen. Crozier. I think, without the possibility of using the piecework method of payment, I should try to set a task where it was possible, and would pay everybody who met that task the same pay.

Mr. Nolan. The same pay that you paid the man who set the task?

Gen. Crozier. If I arrived at the idea of what the task ought to be in that way, I should expect to; yes, sir.

Mr. Nolan. Were you in charge of the Ordnance Department during the Spanish-American War?

Gen. CROZIER. I was in the Ordnance Department, but during a considerable part of that war I was temporarily detached and assigned to the Inspector General's Department.

Mr. NOLAN. Do you know of any instance where labor, either organized or unorganized, in the Government, put any handicaps in the way of efficiency, and affected the service of the Government of the United States during the Spanish-American War?

Gen. CROZIER. I do not know of any such case.

Mr. NOLAN. Do you know whether the employees generally were willing to cooperate wherever they found an emergency situation, in order to assist the men at the front to do their part at a great sacrifice?

Gen. CROZIER. I have no evidence to the contrary, and I do not believe the contrary.

Mr. NOLAN. These questions were intended to follow up the questions of Mr. Denison. I wanted to find out what the attitude of labor was, and whether it was organized or unorganized in the Government establishments, and whether the men showed a disposition to cooperate with the Government and with the men at the front to get the most effective service.

Gen. CROZIER. I was not aware of anything troublesome in the attitude of labor.

Mr. NOLAN. That is all.

Mr. KEATING. In your statement of how you determined upon the time that should be consumed in a task you said that you first took the time in which the ordinary workman might perform the task. You added two-thirds to that, and then two-thirds of that total, making the example which you cited. Now, Senator Borah, in a report on this Taylor system of shop management, which was submitted to the Senate in the Sixty-second Congress, quotes what is alleged to be a paragraph from your annual report. It says "See Annual Report of the Chief of Ordnance for fiscal year ending June 30, 1911, page 17." I will read this:

> For example, a workman has been doing a piece of work in 190 minutes. After painstaking study of the job and of all the means of saving time, the man is carefully instructed as to these means, and is told that for every minute saved, within, say, 120 minutes, he will be paid for half a minute at his regular rate, in addition to his regular daily pay; and that it is thought that he can do the work in 72 minutes, for which time the increase over his regular pay will amount to 33½ per cent.

Is that a correct quotation from that report?

Gen. CROZIER. I think so.

Mr. KEATING. May I ask you, General, how you reconcile that with your statement that you made concerning the manner of fixing the tasks?

Gen. CROZIER. Where do you find the discrepancy, Mr. Keating?

Mr. KEATING. In the first instance you said that a good workman had been doing the work in 90 minutes.

Gen. CROZIER. It is 190 minutes.

Mr. KEATING. In the example which you submitted half an hour ago you stated that if a good workman did the task in 90 minutes, you then added two-thirds of that, which would make 150 minutes, and then you added two-thirds of 150, which would make 250 minutes.

Gen. CROZIER. Yes, sir.

Mr. Keating. And that you began offering a bonus when a man dropped below 250 minutes?

Gen. Crozier. Yes, sir.

Mr. Keating. According to this quotation, when you found that the workman had been doing a piece of work in 190 minutes, instead of adding to the time that he would be allowed to do the work, you began to substract.

Gen. Crozier. Yes, sir. I see now where the question arises in your mind. That 190 minutes is not the time in which it had been determined, by careful time study, that a man could do the work. It is just the time that had been required by this workman going along in his usual way, with lost of lost motion and failure to take advantage of short cuts. It was done in the way in which a whole lot of the work is done in shops by good men and well-disposed men, as he was. Time study of that work would have shown that he could do that work in very much less than 120 minutes, which was afterwards set as the time within which he would be paid for saving time; that is to say, it had been ascertained that he could do the work very well in 72 minutes.

Mr. Keating. You consider this a very fair illustration of what may be accomplished by scientific management?

Gen. Crozier. It is an illustration that occurred in actual practice.

Mr. Keating. That the ordinary workman takes 190 minutes to perform a task which, if he were operating under scientific management, he could perform in 72 minutes?

Gen. Crozier. That is oftentimes the case. That is not extreme at all.

Mr. Keating. Without any injurious effects on the workman?

Gen. Crozier. Without the slightest injurious effects, and without working at a rate which he does not like.

Mr. Keating. In order to bring about that result, is it necessary to provide improved facilities and machinery?

Gen. Crozier. Oftentimes time study develops the fact that some kind of an improvement is quite possible, and it is made, without which the man would never be able to do the work in the time allotted.

Mr. Keating. Take this example that you incorporated in your annual report. It must have made a deep impression on you.

Gen. Crozier. I might say that it was incorporated in the annual report because it was the first instance in which we had applied the time study and premium system to work.

Mr. Keating. Did the planning room have anything to do with the result?

Gen. Crozier. I do not see where it would have come in. What you have in mind occurred seven years ago. It is not as fresh in my mind as it should be, perhaps. In order to have that man keep that up it would be necessary that he should have everything he needed right there. He should have the blanks on which he was going to work, the tools with which he was to work, and everything else of that kind. The planning room, therefore, would have something to do with that, because it would have to see that these things were on hand.

Mr. Keating. If we reverse these figures and start at the 72 minutes, will we figure out 190 minutes in which the man will be permitted to perform the task?

Gen. **Crozier.** No, sir; there is no method of figuring by which you would arrive at the 190 minutes, because that was the time which the man had taken when he was working along independently, and without any special assistance and without this special study. There is no process by which the 190 minutes could be arrived at from these other figures.

Mr. **Keating.** Let us see if that is correct: Suppose you take 72 minutes and add to that two-thirds, and then add two-thirds of that total.

Gen. **Crozier.** Well, we take 72 minutes and add one-third of that, which is 24. Two-thirds make 48, and adding 48 to 72, we get 120 minutes. When we speak of the 72 minutes, we speak of the time which has been reached by finding the quickest time in which this workman could do this work and adding two-thirds. Having done that we reach 72. When he attains 72 minutes, he gets one-third premium. In order to get the time within which he would get some premium, we add the second two-thirds, and that gives 120 minutes. If he comes within 120 minutes, that gives him some premium.

Mr. **Keating.** I beg your pardon, General. I am not much of a mathematician myself, but I think you are mistaken as to your figures. The 72 minutes is the minimum time in which he can do the task, as I understand it?

Gen. **Crozier.** No, sir; that is the time in which he is reasonably expected to perform it, and not the minimum time. That is the time in which he can do it all the time. On a spurt, or with good luck, and in the quickest possible time, he can do it in less than 72 minutes.

Mr. **Keating.** Let us refer now to this Frankford Arsenal order. You issued an order before the rider on the military bill reached the Senate. What was the nature of that order? I did not catch it when you made your statement.

Gen. **Crozier.** I directed the suspension of the payment of all premiums except such as had accrued at the time of the receipt of the order.

Mr. **Keating.** Did you notify the workmen that the premium system would be abolished in case the rider carried?

Gen. **Crozier.** I intended that to be the effect, except that I realized the rider was attached only to the Army bill. I fully expected that the same rider would be attached to the fortifications bill, and I have never been able to understand why it was not.

Mr. **Keating.** How much of a reduction did that cause in the salaries of the employees affected?

Gen. **Crozier.** The best estimate can be formed by looking at the table which I have handed to the stenographer. Applying it to the month of January, my recollection now is that the premiums paid in January, 1916, were $3,300. That kind of an order applied to the force existing this last January would have reduced the pay of the establishment $3,300.

Mr. **Keating.** When did you revoke that order?

Gen. **Crozier.** As soon as the issue was determined by the passage of the bill with that legislation attached.

Mr. **Keating.** You went back to what system?

Gen. CROZIER. I stopped the premium payments at the Frankford Arsenal. I went back at the Watertown Arsenal to the system which had prevailed before I issued the order.

Mr. KEATING. What about the Frankford Arsenal?

Gen. CROZIER. There I changed from the premium system to the piece-work system.

Mr. KEATING. What was the result on the salaries of the employees?

Gen. CROZIER. I do not think there was very much effect after that, as compared with what their salaries had been before I issued the order, because by an easy arrangement a piece-work system of payment was devised which gave the same pay as the premium system had given.

Mr. KEATING. You succeeded in that way in evading the will of Congress?

Gen. CROZIER. I succeeded in avoiding the application of the reduction. I can not say it was the will of Congress, because one of the prominent advocates of your legislation—when I say "your" I do not mean you personally—said it was not intended to apply to the piecework system.

Mr. KEATING. Would you share his view in case we passed this bill?

Gen. CROZIER. That may have been what he thought was the intention. It is a difficult matter to find out just what is intended by legislation sometimes.

Mr. KEATING. You knew this gentleman's ability as a lawyer?

Gen. CROZIER. I did not rest on that. I appealed to the comptroller.

Mr. KEATING. You would not accept the comptroller's opinion, after the penalty was attached?

Gen. CROZIER. I would not.

Mr. KEATING. It would be comparatively easy to determine what the will of Congress was, and execute it, would it not?

Gen. CROZIER. It would be then up to me to avoid the risk of directing an officer to perform an act which might be a criminal offense.

Mr. KEATING. Didn't you understand that when Congress added that rider it wished the premium and bonus systems to be abolished in Government work?

Gen. CROZIER. I had no way of knowing the will of Congress except by its legislation. I can perhaps throw a little light on the latter by saying: The Member of Congress who proposed that amendment, and at whose instance it was added to the law, was aware, before it was too late to attach that same kind of a rider to the fortifications bill, that without attaching it the legislation would not apply to funds under the fortifications bill, and he did not seek to do that.

Mr. KEATING. You did not seem to experience any particular difficulty in interpreting the law when you issued the order suspending the bonus system at Frankford Arsenal.

Gen. CROZIER. The law applies to Frankford. Do you mean Watertown Arsenal?

Mr. KEATING. You issued an order at Frankford which you say you intended as a warning to the employees as to what would occur in case it went into effect.

Gen. CROZIER. Yes, sir.

Mr. KEATING. Then, after the rider was put into effect, you came forward with a scheme by which you evaded the plain intent of Congress, but you did not tell the workmen you had that in mind when you issued the first order.

Gen. CROZIER. You say I evaded the plain intent of Congress. I did not evade it in the opinion of the comptroller.

Mr. KEATING. How about Frankford Arsenal? Was that order issued under a misapprehension of what this legislation meant or intended?

To be perfectly frank, you attempted to show these employees what you thought the effect of this legislation would be if it passed, and after the rider was adopted, you found means by which you could avoid the purpose of the legislation?

Gen. CROZIER. I found means by which I saved them from the disadvantages of the legislation.

Mr. KEATING. You did not suggest there was a way out of it when you issued the warning?

Gen. CROZIER. I did not.

Mr. KEATING. You referred to this legislation that was pending and you warned them if the legislation was passed a certain situation would be created, and you did that for the purpose of getting them to protest to Senators and Representatives?

Gen. CROZIER. I did that for the purpose of allowing them to protest if they wanted to.

Mr. KEATING. You are warning them that in case certain legislation was enacted a certain condition would be created, and instead of that you created an entirely different situation?

Gen. CROZIER. I found a way of saving them from it.

Mr. KEATING. You think it is perfectly proper, do you, for the Chief or Ordnance of the United States Army to conduct himself in that fashion?

Gen. CROZIER. I do.

Mr. KEATING. While legislation is pending in Congress?

Gen. CROZIER. I do.

Mr. DENISON. The questions that I put to you a while ago were propounded with the idea of finding out what the result would be in case of any emergency such as a war. I did not have in mind what the attitude of organized labor would be, and I do not think I stated anything along that line. I interrogated you in order to get your judgment as to whether or not, under emergency conditions, it might become desirable to use a system of premiums or a bonus system in order to get an increased effort on the part of the men. That is what I intended to interrogate you about.

Gen. CROZIER. Yes. Under the conditions of war I would say that you would get better results by giving a reward than by not giving a reward. I will not confine myself to workmen. I will say any set of employees. I wish to emphasize the fact that I believe there are many employees—and there are just as many among the class called workmen as in the other classes—who would respond to an appeal to their patriotism under those circumstances.

Mr. DENISON. I have no doubt that the laboring men all over the country, in whatever field of work they are engaged, would respond as quickly, either to go to the front or do their part in the munitions factories, as anyone else, but I wanted to get the benefit of your judgment and your observation as to whether or not a condition might arise where the offer of a bonus or premium would result in an increased output.

Mr. KEATING. I know that you must have followed the developments in Europe with a great deal of interest and accurate observation, and I want to ask you if you are familiar with the attitude of the Welsh miners in their strike in connection with the output of coal in England during the war?

Gen. CROZIER. Not thoroughly, Mr. Keating. I only know what I have read in the newspapers. I have never read a Government publication on the subject.

Mr. KEATING. Then you are not familiar with the fact that during the dependency of that strike, while the coal miners of Wales were out of all the mines, a proposition was submitted to the cabinet of Great Britain which was substantially as follows: The members of the organization were to return to work in the mines and receive such compensation as might be necessary in order to purchase food to sustain life for themselves and their families, and they were to work such hours as might be determined safe if the men who owned the coal mines would undertake to sell the coal to the Government at cost.

Gen. CROZIER. I never saw that statement, Mr. Keating.

Mr. KEATING. That is the case, and I mention it now merely that the record of organized labor in connection with the war in Europe, at least the English end of it, may be justified to a certain extent. I think you will find, if you examine into the disturbances in England in connection with the manufacture of munitions, that much of the controversy between labor and the Government arises from the fact that the laborers feel that the owners of the munitions factories and the coal mines are earning tremendous profits, and that they are entitled to share in those profits. That is largely the case, and in the Welsh case it was exactly as I have stated it to you. The men were willing, practically, to work for their board, if the Government could get coal at cost. I am sure you have no desire, any more than I have, to place labor in a false light in that connection.

Gen. CROZIER. I think it may be of interest, if my attitude has any significance in connection with this subject, to say that I have many times expressed myself as not opposed to the organization of labor. I think that no one in this world is sure of getting his bare rights unless he has some power to enforce them. In the case of the people known as workmen, who have small power individually, I do not know of any way in which they can exert power, unless they act collectively.

Mr. KEATING. It would naturally appeal to an Army officer.

Gen. CROZIER. Since you have questioned me at some length in regard to this incident at Frankford Arsenal, I would like to submit a short letter which I had not intended to submit. It was an informal letter which was written to me by the commanding officer of the arsenal at the time when I lifted the suspension of the premium payments, after the legislation had been enacted which we have been talking about. This shows the effect of that lifting. It states the attitude of the employees, and throws some light on the question whether or not the employees like this system of payment which has been called into question. The letter is so informal that the writer forgot to sign it. He is Col. Montgomery. It is also so informal that the first sentence of the letter does not express what he meant to say. He speaks of my suspension of premium payments, when he really means the lifting or the removal of the suspension. I mention these things merely to show how informal the letter was, how far from an official document it is, and how it was never expected to be given any publicity. I will read the letter:

FRANKFORD ARSENAL,
Philadelphia, Pa., March 8, 1916.

Gen. WILLIAM CROZIER,
Ordnance Office, War Department, Washington, D. C.

DEAR GENERAL: When your suspension of premium payments was announced in the cartridge factory, Shinkle tells me that there was a complete change in the whole atmosphere of the building. Pessimism gave way to optimism, dissatisfaction to complete contentment, faces marked with care to faces covered with cheerfulness, etc. There never was a better illustration of the fact that the premium system, when administered in the interests of the employees, is one of the greatest stimulus for the moral, physical, and financial well-being of the employees. There must be cases, of course, where any system or task, whether premium or piece rate, etc., may be administered so harshly—as when the children of Israel were required to make bricks without straw—that it results in lowering the nervous and physical strength of the employee, but I believe that such cases are very rare, indeed.

* * * * * * *

Shinkle was Maj. Shinkle, who was in charge of the cartridge branch of the arsenal works.

Mr. NOLAN. Will you submit, for the purposes of the record here, a copy of the order that you issued, as well as any correspondence that you had in connection with it?

Gen. CROZIER. Yes, sir; I will be glad to submit a copy of the order. Do you mean correspondence inquiring as to the meaning of the order?

Mr. NOLAN. Any correspondence relative to it.

Gen. CROZIER. I have been corresponding with reference to the general subject ever since.

Mr. NOLAN. I mean correspondence in regard to the order itself, which either preceded or followed it.

Gen. CROZIER. I do not remember that there was any, but if there was I will submit it.

Mr. KEATING. There does not seem to be any further questions. We are obliged to you for appearing here to testify before the committee.

Gen. CROZIER. I am very glad to have had the opportunity to appear before the committee.

(Gen. Crozier submitted the following letters in response to Mr. Nolan's request:)

[War Department telegram. Official business.]

WASHINGTON, *January 24, 1915.*

COMMANDING OFFICER,
Watertown Arsenal, Mass.:

Cease all time studies and all premium payments, except such as shall have accrued at time of notification of employees and notify them at once.

CROZIER.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, March 5, 1915.

From: The Ordnance Office.
To: The Commanding Officer, Watertown Arsenal.
Subject: Resumption of premium payments.

1. Referring to the instructions of January 24, 1915 (O. O. 10222/535), directing the suspension of time studies and of all premium payments except such as had accrued at the time of the suspension, you are informed that the suspension is hereby removed, and that time studies and premium payments, in accordance with the methods which were in practice at the time of the suspension, may be resumed and continued until June next, inclusive, after which date elemental time studies and premium payments from funds appropriated in the Army act will be suspended during the fiscal year ending June 30, 1916.

2. You will receive further instructions concerning the legislation contained in the Army act, and the steps to be taken for carrying its provisions into effect.

WILLIAM CROZIER,
Brigadier General, Chief of Ordnance, United States Army.

[First indorsement.]

WATERTOWN ARSENAL, *March 8, 1915.*

To CHIEF OF ORDNANCE:

Contents noted and necessary action taken.

C. B. WHEELER,
Colonel, Ordnance Department, Commanding.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, January 26, 1915.

From: The Ordnance Office.
To: The Commanding Officer, Frankford Arsenal.
Subject: Suspension of premium payments.

1. All premium payments will be suspended at once, except such as have accrued at the time of notification of their suspension, and the notification will be given at once. This does not apply to piece-rate payments, but only to premiums over and above regular day wages, which are paid to employees receiving day wages.

WILLIAM CROZIER,
*Brigadier General, Chief of Ordnance,
United States Army.*

[First indorsement.]

FRANKFORD ARSENAL, *January 27, 1915.*

To the CHIEF OF ORDNANCE:

1. The preceding instructions reached the undersigned at 2:50 p. m. to-day, as the greater part of the Washington mail did not reach this office until the afternoon. These instructions were promulgated to the shops by telephone and by publishing on bulletin boards the inclosed circular.

GEORGE MONTGOMERY,
Lieutenant Colonel, Ordnance Department, Commanding.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, March 5, 1915.

From: The Ordnance Office.
To: The Commanding Officer Frankford Arsenal.
Subject: Resumption of premium payments.

1. Referring to the instructions of January 26, 1915 (O. O. 18060–G/3002), to suspend all premium payments except those which had already accrued, you are informed that this suspension is hereby removed, and that premium payments may be resumed, in accordance with the methods which were prevailing

at the time of the suspension, and may continue until June 30 next, inclusive, after which date the legislation prohibiting premium payments from funds appropriated in the Army act take effect, and will remain in effect during the fiscal year ending June 30, 1916.

2. You will receive further instructions in regard to the operation of this act, and the means to be employed for complying with its provision.

WILLIAM CROZIER,
Brigadier General, Chief of Ordnance,
United States Army.

COMMITTEE ON LABOR,
HOUSE OF REPRESENTATIVES,
Washington, D. C., Saturday, April 1, 1916.

The committee this day met at 10 o'clock a. m., Hon. Edward Keating (acting chairman) presiding.

Mr. EMERY. Mr. Chairman, we have no other witnesses to present at this time, because Mr. Richards, who was to have been a witness, was called away and had to leave. He received a telegram compelling him to leave. I hope the committee will realize that in our endeavor to save time we undertook to make our presentation of this question merely representative. We did not care to lumber up your record with cumulative testimony. We could have presented many witnesses from different parts of the country, representing not only their individual views but those of associations, but I understand the committee desired to conclude these hearings on Saturday, so I have uniformly replied to inquiries addressed to me that that was the wish of the committee, and that they could address their views to the committee if they so wished, and that the committee could decide whether to incorporate them in the record.

Mr. KEATING. In one or two cases we have, in reply to such communications, stated that the committee would insert statements from them in the record, from one or two associations, so that I think the case will be pretty well covered.

STATEMENT OF HON. CLYDE H. TAVENNER, A MEMBER OF CONGRESS FROM THE STATE OF ILLINOIS.

Mr. TAVENNER. I would like to have the committee subpœna Mr. Richards to come back and testify. The reason is that his name is one signed to a letter that was sent out to raise funds with which to defeat this bill. While I do not blame the manufacturers at all for having their side represented here, I am anxious to know in what manner these funds are to be expended. As a result of revelations resulting from the Mulhall investigating committee, I believe Congress is justified in hereafter keeping track of how money, raised for the purpose of fighting legislation in the interests of workingmen, is expended here, and what their business methods are. I am perfectly willing, so far as I am concerned, to make any kind of a statement that is desired relative to how much money I have received or expended, and I am the one who introduced this bill. I can say that I have not received any money at all, and so far as I know no one who is advocating the passage of this bill has either received any money, collected any, or expended any. What I want to find out from Mr. Richards is how many of these letters have been sent out.

A gentleman stated here the other day that only $65 had been received.

Mr. NOLAN. He said he only received $65.

Mr. TAVENNER. This letter is only dated March 21, and he said he had not been home for three or four days. What I would like to get is to find out how many of these letters have been sent out, and how much money has been received. I also think that Mr. Emery should file with the committee a list of all of the manufacturers he represents here. He states he represents 4,000 manufacturers. I think it is only fair to the committee to know the names of the manufacturers, and let those names go in the record. I want to offer here a letter I received from a gentleman by the name of John W. Powell, who is unknown to me. The letter is self-explanatory. I will either read it, or present it, with the matter he sent me.

Mr. KEATING. You might read it.

Mr. TAVENNER. The letter is as follows:

531 HARVARD STREET, *Washington, D. C.*

REPRESENTATIVE TAVENNER, *of Illinois:*

I trust you will pardon me for presuming to encroach upon your time, but I am desirous of calling your attention to the activities of certain capitalistic interests in an effort to defeat, by use of money, a bill, of which you are the author, now pending in the United States House of Representatives.

The accompanying papers herewith forwarded were received by me at my residence through the United States mail and speak for themselves. These gentlemen evidently think Congressmen and United States Senators are commercial assets, and that prices are subject to the law of supply and demand.

Yours, very truly,

JOHN W. POWELL,
513 Harvard Street, City, Formerly of Indiana.

Then here are two blank envelopes that were sent out with the letter that Mr. Powell inclosed in his letter, and one of the names is that of W. B. Richards, 43 Wall Street, New York City, and they are accompanied by blanks on which they wish him to make contributions. I do not wish to be understood as insinuating or inferring in any manner that there has been any wrongful expenditure of any money. I just take this position, in view of the revelations before the Mulhall investigating committee of the business methods of the manufacturers' associations, that Congress, following that, is justified in watching how these gentlemen work, and we have a right to know how they are spending money to defeat this legislation. I thank the committee very much. I want to put that in the record.

(The letter referred to is as follows:)

GUNN, RICHARDS & CO.,
43 WALL STREET, 43 EXCHANGE PLACE.
New York City, March 21, 1916.

MR. JOHN W. POWELL,
531 Harvard Street NW., Washington, D. C.

DEAR SIR: A persistent effort is being made to obtain legislation which shall prohibit, first, in Government workshops, and later, in private plants, with which the Government has dealings, modern methods of efficiency and economy.

At the last session of Congress, when the bill making the regular appropriations for the support of the Army, was under discussion on the floor of the House, a rider was attached to the following effect:

"No part of this appropriation shall be available for the salary of any officer, manager, superintendent, foreman, or other person having charge of the work of any employee of the United States Government while making or causing to be made with a stop-watch or other time-measuring device a time study of any job or of the movements of any such employee. Nor should any part of the appropriation in this bill be available to pay any premium or bonus or cash reward to any employee in addition to his regular wages, etc."

The effect of this legislation expired with the appropriation.

Mr. Tavenner, of Illinois, has presented in the House a bill which has been referred to the Committee on Labor, which provides that—

"It shall be unlawful for any officer, manager, superintendent, foreman, or other person having charge of the work of any employee of the United States Government to make or cause to be made with a stop-watch or other time-measuring device a time study of any job of any such employee, or of the movement of any such employee while engaged upon such work. No premiums or bonuses or cash reward shall be paid to any employee in addition to his regular wages, etc."

The next step planned by the proponents of this legislation is an act to restrict the Government officers from buying any materials or supplies which have been manufactured by any shop employing modern efficiency methods. Failing direct legislation both of these ends may be sought by riders on the appropriation bills as was done at the last session.

A committee of 10 has been appointed "To oppose legislation antagonistic to efficiency in American industry," composed of Henry R. Towne, chairman of the board, Yale & Towne Manufacturing Co., New York; Miner Chipman, industrial counsel, New York; John R. Dunlap, proprietor and editor of Engineering Magazine, New York; Richard A. Feiss, manager, the Clothcraft Shops, Cleveland, Ohio; H. P. Kendall, manager, Plimpton Press, Norwood, Mass.; William Kent, consulting engineer, New York; W. W. Macon, editor, Iron Age, New York; Willis B. Richards, Gunn, Richards & Co., New York; Sanford E. Thompson, consulting engineer, Boston, Mass.; W. Herman Greul, Otis Elevator Co., New York; and this committee on February 1 in assigning the various duties to the members of the committee assigned to me the responsibility of raising funds.

I think the seriousness of the effort on which this committee is engaged will appeal to you without any argument from me, and that you will see the reasonableness of contributing to defray the expense which the committee will face in bringing before the Members of the Senate and the House of Representatives a clear knowledge of the probable effect of this legislation, if enacted.

Your check may be made to the order of W. B. Richards. The pro rata part of it not expended by the committee will be returned.

It will occur to you to write your views to your Congressman. Will you kindly send us a carbon of such letter?

Very truly, yours,

W. B. Richards.

(Please mail this copy to H. R. Towne, chairman, for auditing purposes.)

Henry R. Towne,
9 East Fortieth Street, N. Y.

Dear Sir: We are to-day sending $__________ contribution to the expense of the committee of 10 to oppose legislation antagonistic to efficiency in American industry.

____

(A contribution of from $25 to $250 is suggested.)

W. B. Richards,
43 Wall Street, N. Y.

Dear Sir: Inclosed please find $__________ contribution to the expenses of the committee of 10 to oppose legislation antagonistic to efficiency in American industry.

____

(Two envelopes, with printed addresses, as follows:)

Henry R. Towne, 9 East 40th Street, New York City.
W. B. Richards, 43 Wall Street, New York City.

Mr. Nolan. If you will just pardon me, Mr. Chairman, for asking this question. There is one question I want to ask of Mr. Richards, and I want to ask it of Mr. Tavenner.

A paragraph of Mr. Richards's letter calling attention to the legislation that is attached to the appropriation bill in the last House, and also the bill that was presented and is now being considered by the committee, known as the Tavenner bill, is as follows:

> The next step planned by the proponents of this legislation is an act to restrict the Government officers from buying any materials or supplies which have been manufactured by any shop employing modern efficiency methods. Failing direct legislation, both of these ends may be sought by riders on the appropriation bills as was done at the last session.

You introduced this bill here, Mr. Tavenner, and I would like to ask you if you have in your mind now, provided this bill is successful, offering an amendment to the appropriation bill, or attaching anything to an appropriation bill, or introducing another act to restrict the Government from buying materials or supplies manufactured by any shop employing modern efficiency methods?

Mr. Tavenner. I want to say that that statement there is the first thought or the first I have heard of that suggestion. I never thought of that before. This is the only time I ever saw it. Mr. Nolan, if you will give me that letter, I would like to call your attention here to a specific statement made in this letter.

Mr. Emery. Would the gentleman mind incorporating the whole letter in the record?

Mr. Keating. The whole letter will go in.

Mr. Tavenner. It says here:

"The next step planned by the proponents of this legislation"—that is, a specific, definite statement of the next step planned by the proponents of this legislation—"is an act to restrict the Government." That is absolutely untrue, because I never planned it when I introduced this bill, and if the gentleman who signed this would make that statement which is untrue, could it not be believed that he would make other statements that are equally haphazard?

Mr. Nolan. As far as you know, as the author of this bill, you have never had anything in mind along that line?

Mr. Tavenner. No, sir; I never thought of such a thing until I saw the suggestion there in that letter.

Mr. Emery. Mr. Chairman, may I make a brief statement to the committee, in view of the remarkable statement made to this committee? Mr. Richards has been here for three days. He is a very busy man, and he was anxious to be a witness, and would have been if the opportunity had been offered, but he was called away unexpectedly. He expected to be here this morning, and, if you wish, Mr. Richards will be here at any time, I am sure. There is no occasion to subpœna him, if you desire to do so.

Mr. Nolan. I do not know that we would have that power.

Mr. Emery. Mr. Tavenner evidently thinks you have; but, anyhow, Mr. Richards will be here whenever you wish him. He desires to be a witness, and the only reason he is not here is that he had been here for three days, and he was called out suddenly last night, but you can have him any time you name. If you will name the time Mr. Richards will be here. I do not speak for him because I am his counsel, nor am I counsel for the committee of 10. Mr. Towne is their representative. I represent the National Association of Manufacturers in the matter, and other associations. As Mr. Towne explained to you, that is a committee of engineers or engineering societies, with which the National Association of Manufacturers has nothing to do beyond the fact that it shares the view of this legislation which they expressed and entertain. Of course, if any intimation is to be made to this committee which reflects upon the integrity or good faith of the National Association of Manufacturers, I shall ask that any charge be substantiated.

Mr. TAVENNER. Mr. Chairman, if the committee will allow me, I would like to place something in the record of the report following the investigation of the Mulhall investigating committee.

Mr. EMERY. Mr. Nolan was a member of that committee.

Mr. TAVENNER. I am not particularly anxious to do it, but I say that if the gentleman wishes me to I will do that. I only say, as the result of the revelations made before that committee, that it is only right that Congress should hereafter watch the movements of that organization.

Mr. EMERY. You are intimating, Mr. Tavenner, that the N. A. M. is raising some money for this matter.

Mr. TAVENNER. No; but the N. A. M. is represented here.

Mr. EMERY. Certainly.

Mr. TAVENNER. Therefore, I am particularly interested in seeing what the representative of the N. A. M. does, and where the money comes from, and all about it. I expected the legislation to be opposed. I realize there are two sides to it. The only thing that I want to see is that everything is aboveboard, so that we can see what methods are being used to defeat the legislation.

Mr. EMERY. Mr. Richards's letter is self-explanatory. I am not familiar with it, but I heard it read. As far as I can speak for the National Association of Manufacturers, they court investigation of any kind.

Mr. TAVENNER. I do not care to have the National Association of Manufacturers investigated because of anything it has done here, but I say, to make it plain why I think we ought to watch that association, I will, if the committee will permit, put in extracts from the report of the committee that investigated it that will show why my reason is for watching how they work here.

Mr. NOLAN. Is there necessity to put anything in this record that is already a public document?

Mr. TAVENNER. No; I do not think there is, Mr. Nolan. I am not particularly anxious to. I just say, that if Mr. Emery wishes me to do it, I will, to show why I consider that I am justified in watching the activities of the N. A. M.

Mr. NOLAN. It appears to me here that the committee of 10 was appointed, and they have endeavored to raise funds, but Mr. Towne said they were a committee of engineering experts and those interested in this efficiency system.

Mr. KEATING. Mr. Tavenner's idea, I take it, is this, that where an organization, openly and avowedly, is seeking to raise money for the purpose of influencing legislation, that the operations of such association or combination of individuals should be subject to public inquiry, and that some definite statement concerning the amount of money raised, and the purposes for which the money was expended, should be given to the public in such a way as to show that the money has not been improperly expended, and to sustain that view he cites the revelations in connection with the investigation of the so-called lobby which was made in the Sixty-third Congress. The committee desired to conclude these hearings to-day. Therefore, I doubt if it will be possible to have Mr. Richards placed on the stand. It would not be possible, unless the committee decided to continue the hearings.

Mr. Nolan. It is just possible, Mr. Chairman, that Mr. Frye, who was a member of that committee, under Prof. Hoxie, will be here Monday or Tuesday, and if he wants to come here I would ask the committee to hear him, and in that case I should think it would be a good thing if the committee would ask Mr. Richards to come here.

The Chairman. Of course that is up to the committee.

Mr. Emery. I will communicate with Mr. Richards or you can, Mr. Chairman, whichever you wish.

Mr. Keating. Suppose we let the matter rest until we get something definite about your desire to have Mr. Frye here. Would you know this afternoon?

Mr. Nolan. Yes; I think I will.

Mr. Keating. That would give sufficient time to notify Mr. Richards, would it not?

Mr. Emery. Yes.

Mr. Keating. All right; then there is nothing further on that point.

Mr. Emery. We shall expect, of course, Mr. Chairman, that if any inquiry is made which reflects upon the methods of these gentlemen that the same inquiry shall extend to anyone who betrays an interest in this matter, whether for or against it.

Mr. Keating. Of course the opponents of the bill have been accorded two full days here.

Mr. Emery. I am referring to charges of this character.

Mr. Keating. In case the committee goes into charges of this kind I am confident that I can safely assure everyone interested a fair and full hearing.

Mr. Nolan. The reason I would like to have Mr. Frye is that he is the only one of those gentlemen I know. Prof. Hoxie would suit me as well as Mr. Frye or Mr. Valentine, all three, or any member of them. The gentlemen that were here made suggestions, but we have not heard testimony from anybody that had given this matter any great amount of thought or that had conducted any investigation since the committee was appointed in the Sixty-second Congress and all the hearings were had on the bill in the Sixty-third Congress, and I think that somebody that had an opportunity to study this scientific management in the shops in which it is applied ought to come before the committee. I think that if Mr. Frye will come to Washington we ought to have the benefit of his statement. The fact is that I am in doubt as to whether they wrote that report as it was printed in the final report of the Committee on Industrial Relations. I would like to have at least one of those three men come here and tell us just exactly what their views are on this matter, because they wrote a unanimous report, and I have not been able to get definite information on it, and I am in doubt as to whether or not the final report that was written was the one that was included in the final report of the Committee on Industrial Relations:

Mr. **Emery.** Do I understand, Mr. Chairman, that you wish me to communicate with Mr. Richards to ask him to be here at any particular time?

Mr. **Keating.** I think before doing that we should ascertain whether the committee desires to continue the hearings on Monday or Tuesday. Personally, I am quite willing to go on, if that is the desire of the committee, but I think that we should, as far as possible, consult with some of the members. The understanding was that we would close to-day, but if there is important testimony to be presented it might be well to put the matter over until Tuesday.

Mr. **Emery.** I will not be here personally on Monday, Mr. Chairman, but I will leave Mr. Richards's address with the clerk, and I know that a communication from you addressed to him, or one from me if you wish it—would get him here just as quickly as you desire.

Mr. **Keating.** Will you leave his address with the clerk?

Mr. **Emery.** Yes, sir.

Mr. **Keating.** And it might be well for you to communicate with him.

Mr. **Nolan.** We have got his address right here on that letterhead.

Mr. **Keating.** Shall we proceed with Mr. Alifas?

STATEMENT OF MR. N. P. ALIFAS, PRESIDENT DISTRICT NO. 44, INTERNATIONAL ASSOCIATION OF MACHINISTS, ROOM 3, NAVAL LODGE BUILDING, WASHINGTON, D. C.

Mr. **Alifas.** Mr. Chairman and gentlemen of the committee, the people whom I have the honor to represent have been for the last five or six years interested in preventing the introduction and extension of the Taylor system of shop management, or similar systems, in the Government workshops, and the bill that is now before you is one of the means toward that end.

Our main reasons for opposing so-called scientific management, as exemplified in the Taylor system, are what the proponents of the measure claim it is going to do for us and do to us, and what the officials of the Government state that they propose to carry out.

We have been criticised by the opponents of this legislation largely for resting a part of our opposition on apprehension. They claim that we should wait until something happens before we oppose any proposed system of management. Now, it seems to me that the respect in which human beings are superior to the brute is in their ability to reason and to deduct consequences from proposed actions. When we get to a point where we can not deduct what the probable result of certain measures are, we are not going to advance as a human race.

I will state, however, that apprehension is not confined to our side. I noted in the remarks of the gentlemen who have opposed this bill that a large part of their opposition to our position is based on apprehension. They apprehend, in the first place, that if we stop these practices in the Government manufacturing plants that we are going to extend it to persons employed on contracts for the Government, and then they apprehend that we are going to extend it all through industry in the United States. That apprehension of theirs may be very logical, but if their argument as applied to us is good, if we have no justification to apprehend consequences, or what we conceive to be the consequences, of the system, then they should not make that argument themselves. They can not, with justice, be on both sides of the fence. They must either cease apprehending what this bill does not aim at or else give us the right to apprehend what we conceive to be the consequences of these systems of shop management. Applying our position to the War Department, let us suppose that if some foreign power should outline a procedure for taking possession of the United States, for bombarding New York, say, and taking possession of it, and intimate to this country that they were going to do that just as soon as they found an opportunity, and further outlined their plan of how they were going to take possession of certain strategical positions in the vicinity of New York. If the War Department should not become apprehensive and take measures to prevent such an invasion, I would very much question the wisdom of the officials of that department. It seems to me we have a right to apprehend evil consequences when they are pointed out to us.

Now, as to the justification for our apprehension, I would like to just quote you some of the writings of people who have favored the Taylor system. In the first place, a book known as "Shop Management," which is a product from the pen of Mr. Frederick W. Taylor, was presented some years ago before a body of scientific engineers, and was written at a time when he could afford to be frank. He was not at that time under the strain of being obliged to make his system appeal to the public; that is, he did not have to indulge in apologies for his ideas. He could be perfectly frank and free, and being a man who was experienced with handling industrial plants, and dealing with employers, I take it that he used the character of arguments he believed would appeal to manufacturers in general, as something desirable to be attained. In reading paragraphs from this book it must be remembered that the kind of arguments and ideas presented in the mind of Mr. Taylor, at least, would appeal to the people in whose workshops he desired to install his system. The first intimation we had that the War Department was going to introduce the Taylor system was upon finding a copy of this book on the desks of several of the officials of the Rock Island Arsenal, in the machine shops. We read the book and concluded that that sort of system was not the kind that was going to be beneficial to the workmen, and we protested against its introduction. We learned that the Ordnance Department officials could see nothing wrong about the views presented in this book, nor about the purposes of Mr. Taylor; and we concluded that if their conception of fair dealing and proper treatment of employees was what this document claimed, why, we could see that their conception of fairness was entirely different from ours.

There have already been read a number of extracts before this committee by different members of the committee, and therefore I am not going to read very many—just two or three—to illustrate the different aspects of the question. I will state here that our opposition to the system was mainly based on the proposition that it is so constituted as to form a speeding-up system. Every element of it is so arranged as to accelerate the workmen. It provides for the substitution of cheaper workmen for the class of workmen that are now doing the work of the Government. It provides for a gradual elimination of men who are unable to stand the pace. It is quite beside the question to ask whether or not the system has been carried out to that extent. That is another question, and we do not propose to allow this thing to run along uninterruptedly until it has been carried out to its full extent. It would be manifestly unjust for anyone to expect us to wait until all of this dire disaster had been heaped upon us before we began to protest. What we propose to do is to stop it before it goes that far. That is what our organization is for, and any reasonable man would expect that. If a man should hold you up at the point of a gun you would not wait until he shot you to try to take the gun away from him. You would take the gun away from him first. It is not necessary for you to be shot in order to understand that a bullet is going to hurt you. One of the outstanding paragraphs in Mr. Taylor's work illustrating the purposes of his system is this:

> When the writer left the steel works the Bethlehem pieceworkers were the finest body of picked laborers that he has ever seen together. They were practically all first-class men, because in each case the task which they were called upon to perform was such that only a first-class man could do it. The tasks were all purposely made so severe that not more than one out of five laborers (perhaps even a smaller percentage than this) could keep up.
>
> A careful inquiry into the condition of these men when away from work developed the fact that out of the whole gang only two were said to be drinking men. This does not, of course, imply that many of them did not take an occasional drink. The fact is that a steady drinker would find it almost impossible to keep up with the pace which was set, so that they were practically all sober.

This is taken from "Shop Management," pages 1361 and 1362. This ideal is held up to the employer as an example—as the goal that they want to attain in all shops. It must be admitted by anyone that if tasks are made so severe that a man who is even slightly addicted to the use of intoxicants is unable to hold his job that the work is getting too strenuous. Regarding specific instances of employers having it suggested to them to force workmen to attain these tasks there is a colloquy to illustrate this point between Mr. Hawkins and Mr. Taylor in "Shop Management," pages 1479 and 1480, which reads as follows:

> I think that Mr. Hawkins has also overlooked another important factor, and that is the question of time. If Mr. Hawkins expects large results in six months or a year in very large works he is looking for the impossible. If he expects to convert union men to a higher rate of production, coupled with high wages, in six months or a year he is expecting next to an impossibility. But if he is patient enough to wait for two or three years he can go among almost any set of workmen in this country and not find the trouble which he did in Massachusetts.
>
> Mr. HAWKINS. I have waited six years now.
>
> Mr. TAYLOR. Have you tried the incisive plan of centering on one man, instead of going at the whole shooting match at once? I think failure is due to a lack of patient persistence on the part of the employers and then to a lack of centering right on to a single man. No workman can long resist the help and persuasion of five foremen over him. He will either do the work as he is told or leave.

That is the sort of persuasion they propose to use upon the workmen. I am not saying they have gone to those lengths in the War Department as yet, but they have not said they are not going to do it; in fact, the intimation is that they are going to do it.

In the report of the Chief of Ordnance for the fiscal year 1911, on page 17, he has the following to say:

> The confirmation of the claims as to the advantages of the features first installed, which the practical test at Watertown afforded, lends such force to these further claims that, in the absence of any positive evidence to the contrary, I do not think they can be disregarded by an administrative officer honestly desirous of serving the interests of the Government.

At that time we had been protesting against the speeding-up features of scientific management. The Chief of Ordnance had installed the first features; that is, the routing of work and the planning and estimating of work. We had not raised any considerable objection to these measures except in so far as they were going to be used as a basis upon which the rest of the system could be introduced. If these preliminary features were going to be used as a point of vantage from which they could force the rest of it on us, we were going to object to them, just the same as you would object to having a foreign fleet cross the ocean for offensive purposes, even though while crossing the ocean it would not be doing any damage to this country. The Chief of Ordnance says that from the success of this, these preliminary features, that there is some justification for assuming that the rest of it would be advantageous. But one of the features of the system is that it must be installed gradually; that they must not put on the screws until after they have got it pretty well under way and everybody is under the sway of it. Then they can proceed to get the output. That, I think, is some cause for apprehension. The Chief of Ordnance has stated that judging by the success of the first parts of the system the supposition is that the rest of it is good, and ought to be applied. We have been assured practically from year to year that the system is going to be extended, if it becomes feasible, and one part of the system that I have already referred to, that of displacing skilled men with nonskilled men, is one of the most objectionable.

Mr. Taylor, in his work, says on page 1347, relating to the question of what he considers high wages, as follows:

> By high wages he means wages which are high only with relation to the average of the class to which the man belongs and which are paid only to those who do much more or better work than the average of their class. He would not for an instant advocate the use of a high-priced tradesman to do the work which could be done by a trained laborer or a lower-priced man.

The advocates of scientific management claim that it increases the men's earnings. A man will get his basic rate, and then, because of his efficiency, he will get an added amount, which is called either a premium, or a bonus, or some such designation. That is true, provided the basic rate is just, but they claim that by their system they are able to put a laborer on the work of a mechanic. The laborer gets his dollar and a half or two dollars a day, plus a premium; but the day wage and the premium combined do not equal the amount that the mechanic got who was previously doing that class of work. That, in our opinion, is not increasing wages; it is merely increasing a laborer's wages and throwing the mechanic out of work. If the process keeps up, anyone knows that the mechanic, in order to make a living, will compete with the laborer. He is going to offer his superior services for the same wages that the laborer is willing to work for. That is about the way it would work out, if they had their way about introducing the system.

I was going to cite the evident intentions of the War Department, or the Ordnance Department, in relation to that matter. In the report of the Chief of Ordnance for the fiscal year 1915, on page 17, he has the following to say:

> I do not myself find in the practice of scientific management in this department any sign of relief from the necessity for highly skilled workmen in at least the proportion in which we have heretofore employed them, but if I should meet such a possibility, I would not consider that the advantages of greater ease of production and improvement of the lot of less skilled workers would be offset by any supposed advantage in the maintenance of an unnecessarily large proportion of highly skilled craftsmen.

He says he has not found any relief from the necessity of highly skilled men. That intimates that it would be a relief if he could find some way to eliminate the highly skilled workmen, and the proponents of the Taylor system claim that they are able to do that if they are allowed to operate their system. Now, when an official of the Government continually tells us that he is going to try to displace skilled men and high-priced men with unskilled men and low-priced men, we think we are justified in opposing his schemes, regardless of whether they have been tried out, or not.

Now, as to whether or not the Ordnance Department would actually do such a thing possibly needs proof. I will state that in actual practice the Ordnance Department has done that very thing within the last year in a number of instances. At the Frankford Arsenal, which is located in Philadelphia, they had in one department a lot of machines called Steinley machines. They had machinists operating them at the rate of pay of $3.24 a day. The officials conceived the idea of putting unskilled men on those machines, and they did so; men were put on these machines receiving $2.24 a day, $1 a day less. They transferred the men who were operating the machines to other work, and put the unskilled men on them. Shortly after that, work became scarce in the department to which the highly skilled men had been transferred, and they were laid off. However, before they were laid off, some of them, one of them in particular with whom I was talking, informed me that they had been offered to be put back on these Steinley machines if they would accept the $2.24 a day. That was a somewhat roundabout way of reducing wages, but it was doing it, nevertheless. These higher priced men were eliminated by promotion at first, and afterwards were not allowed to be placed back on these Steinley machines at their former rate, but were offered a low rate of pay.

Another illustration taken from the same arsenal. Last fall we had an investigation there by a joint board, composed of employees which our organization had selected and the representatives of the management selected by the commanding officer, to investigate wages in that vicinity. The result of the investigation was the setting of a higher wage scale for different grades of work at that arsenal. They had one classification there known as automatic screw-machine hands and another one known as hand screw-machine hands; the automatic screw-machine hands receiving a rate of $3.76 a day, and the hand screw-machine hands receiving a rate of $2.88. No sooner had this wage scale been set and put in operation than the management conceived the idea of just changing the manner of doing the work, and instead of having that grade of men on these machines, they put laborers on the $2.88 work. These laborers were getting $1.76 a day. They put supervisors over them to show them how to do the work. On the class of work that was to be paid for at the rate of $3.76, and which was supposed to be paid for at that rate, until changed as a result of another wage investigation, that class of work was going to be done at $2.88, simply because the management conceived another method of doing the work. So that all the work we have done in investigating wages would go to nothing, provided that scheme went through. We protested against it. The result is that they are going to hire men at $2.88 and $3.76. That is the favorable result of our protest to the Chief of Ordnance. He has, however, specifically told us that if he thinks it is an advantage to hire these $1.76 men to do the $2.88 work, he is going to do it. He said the investigation was based on wages that were to be paid for men working under the former conditions of labor, and if he changed the conditions, he had a right to hire other kinds of men at lower rates of pay. He stuck to the theory that if he could do that work with the class of men getting $1.76, he was going to do it, and he had done it in some instances. That is not theory or apprehension on our part. Those are facts. The War Department is no respecter of persons. What they would do to one man, they would do to another man. What the Ordnance Department would do to a few men, putting them on the basis of $1.76 a day, we have reasons to believe would be done to all the high-priced men if the opportunity presented itself, and we do not propose to allow that to be done, if we can help it.

Now, that was not under the Taylor system, understand, but the officials who are running the Ordnance Department have become so imbued with the various features of the Taylor system that even though they do not apply all of it they apply it as far as they can, and while they do not apply the stop watch up there, or the premium system, at the present time they get just as near to it as the law, in their opinion, permits them. For instance, they insist that it is perfectly proper to time a man with a watch at the Frankford Arsenal at the present time, provided they time him for one piece only. I have been advised by the men that on jobs that take only 5 or 10 minutes a piece, where they come in lots of 100—we generally consider a lot of 25, 50, or 100 a job—they will take one piece and time a man with a watch on that and see how long it takes him to do it. That is contended by officials of the War Department not to be a violation of the intent of Congress.

Some of the opponents of the pending bill have made mention of what they consider excessive penalties connected with the bill that is before you. In that connection, it seems to me that if officials of the Government are disposed to try to evade the evident intent of Congress just as far, in their opinion, as the law permits, there ought to be reason for some apprehension on their part that something would happen to them besides a mere reprimand.

In spite of the legislation that was passed by the last Congress, no heed has been paid to it by the War Department at the Watertown Arsenal as far as the premium system is concerned. That is due to the fact that this legislation was not attached to the fortifications bill. It is true that they had to stop the time study on the 1st of July of last year, because the money from which the time study is conducted is paid out of the Army bill; but before the 1st of July arrived, I am informed by the employees, the time-study men were put on extra duty and were making all the time study they possibly could, presumably to tide them over the prohibitive season, like anybody would store up for a drought, or for the winter, thinking quite likely they could get along with the time study they had; and, in conjunction with this, if they could evade the intent of Congress by taking money out of the fortifications bill to pay the premiums with, they could conduct the system at the arsenal without a great deal of interference, and that is what has been done.

I would like to state why that provision was not placed on the fortifications bill. We had been led from time to time, through remarks that had been made by the Chief of Ordnance, to assume that if Congress once expressed itself definitely upon this question the system would be stopped. I do not find at this moment the particular citation that I had in mind, but the Chief of Ordnance stated in a hearing before the special committee that was appointed by Congress to investigate the Taylor system that he would not continue a system that was continually the subject of controversy and dispute and created disharmony, and we were led to believe, at least by inference, that if Congress once expressed itself on this question that the system would be stopped. Here I find the quotation above referred to. It is on page 4911 of the Congressional Record of February 23, 1915, and reads as follows:

> Mr. Tilson. There is another question I would like to ask in regard to the system. If, after a fair trial of the second part, as we have called it, of this Taylor system at Watertown Arsenal it should be found that it does not work satisfactorily to both the Government and the men after a fair trial, so it could not be claimed on either side that it had not had a fair trial, it should be discovered that it could not be installed satisfactorily to the workmen themselves and to the management, do you believe that it would be installed at the other arsenals regardless of that fact?
>
> * * * * * * *
>
> Gen. Crozier. Anything that produced permanent dissatisfaction and discontent would be given up. We desire to have our relations with the workmen harmonious.

We conceived the idea that if a clause was attached to the naval bill affecting the Navy Department and one was attached to the Army appropriation bill affecting the War Department that that would be heeded by both departments as to the entire department, and our understanding or our belief in that matter was strengthened by the fact that three days after the Army bill passed the House of Representatives last year a notice was posted at the Watertown Arsenal stopping the time study and the premium system, and two days after that, on the 27th of January, a similar notice was posted at the Frankfort Arsenal. This appropriation bill did not relate to the Watertown Arsenal, but it did affect the Frankford Arsenal directly. Now, if the Chief of Ordnance intended to show the employees what would actually happen under that bill he was misleading them at the Watertown Arsenal, because afterwards he put the system right back again and insisted that it did not apply to the Watertown Arsenal. Now, on account of them stopping the system at these two arsenals just after the bill went through the House, everybody thought that that was going to be the result of the legislation and that it was not necessary to further burden Congress by taking up its time on the floors of both Houses for the purpose of doing a lot of unnecessary work. If the Chief of Ordnance had heeded that expression of Congress, this present bill would possibly not be before the House and it would not be necessary to conduct any further agitation against the Taylor system.

During the debate on the measure in the Senate the opponents of the clause that was attached to the Army bill were continually advising their colleagues to wait until the report came in from the Industrial Relations Commission.

The Secretary of War had some time previous to this asked the Industrial Relations Commission to investigate the system at the Watertown Arsenal and report and intimated that he would follow their recommendations if within his power to carry out their wishes. Senator Root in particular, who led the opposition to our measure, brought out that point. That point has also been brought out in correspondence the Secretary of War had at that time with the Appropriations Committee of the Senate and Members of the Senate, asking them to hold this thing off until the Industrial Relations Commission had finished its report, intimating that his department would follow the recommendations of that commission. Now, the recommendation and views of the commission has been made and expressed, and there has been no change made in the attitude of the War Department on the Taylor system. The commission has made a report on this subject of scientific management, covering about 22 pages, and they criticize very severely the various features of scientific management. It is true that this report does not confine itself to the Watertown Arsenal, but it covers 35 of the best, understand, the best shops operating under scientific management in the country. It says so right here in their report that they have taken the best examples of scientific management, and they criticized them all. In toto, they do not carry out what scientific management proposes as a benefit to the working people. Among the criticisms they make is the lack of scientific accuracy, uniformity, and justice in time study and task setting.

Mr. Emery. Would Mr. Alifas permit me to ask him a question there?

Mr. Alifas. Certainly

Mr. Emery. You say the commission found out, Mr. Alifas. Do you mean the Federal Industrial Commission, or do you mean the committee that made the investigation, that submitted the report?

Mr. Alifas. Mr. Chairman, for the gentleman's information, my understanding is this, that the Industrial Relations Commission consisted of nine men. Four of them agreed upon the Manning report, and three of them agreed upon a supplementary report, and the other two members did not make any recommendations that covered all the features of the other commissioners' report. Now, the Manning report contains a criticism of scientific management. The three men who composed the employers on the commission accepted the view of Mr. Brandeis on scientific management, and I will bring out in a moment or two, just what the result of their combined opinions on this question would be.

Mr. **Emery.** I only asked, because I did not know, when you used the word "committee" or "commission," whether you referred to Mr. Hoxie's committee, or to the commission.

Mr. **Alifas.** I am referring to the report that was presented to the commission by Mr. Hoxie and his committee, which was practically the only information the commission had before them for consideration.

Mr. **Keating.** There is a call of the House, and it will be necessary for the committee to suspend, in order to answer to our names. I presume we better take a recess until 2 o'clock.

Mr. **Emery.** All right, sir.

Mr. **Keating.** I got a telegram from Mr. Frye that he will be here Monday morning.

Mr. **Nolan.** I suppose we better try to make arrangements to-day, Mr. Chairman, to go on again Tuesday morning, after we meet this afternoon. That would give Mr. Emery a chance to notify Mr. Richards.

Mr. **Keating.** Would that be satisfactory to you, Mr. Emery?

Mr. **Emery.** Certainly. If any reflection or intimation has been made that reflects upon Mr. Richards, he ought to be here, by all means.

(Whereupon, the committee took a recess until 2 o'clock p. m.)

AFTER RECESS.

The committee reassembled at 2 o'clock p. m. at the expiration of the recess.

Mr. **Keating.** Mr. Alifas, will you proceed?

STATEMENT OF MR. M. P. ALIFAS—Resumed.

Mr. **Alifas.** Mr. Chairman, at the time of adjournment this noon I was talking about what the industrial commission had recommended in regard to scientific management, and I was reading one or two headings of the commission's report as to failures of scientific management. The heading I was reading was this: "Lack of scientific accuracy, uniformity, and justice in time study and task setting." This is found on page 213 of the report of the commission.

> Far from being the invariable and purely objective matters that they are pictured, the methods and results of time study and task setting are in practice the special sport of individual judgment and opinion, subject to all the possibilities of diversity, inaccuracy, and injustice that arise from human ignorance and prejudice.

On the next page, 214, the following two paragraphs are found:

> Detailed observations of the practice of making time studies and setting tasks showed great variations in methods and results. Seventeen separate sources of variations are pointed out, any one of which is sufficient to and in practice does greatly influence the results of time studies.
>
> In face of such evidence it is obviously absurd to talk of time study as an accurate scientific method in practice or of the tasks set by means of it as objective scientific facts which are not possible or proper subjects of dispute and bargaining.

Those paragraphs show that time study is inaccurate, and when time study is inaccurate, and when it is presumed by the employer to be accurate, of course injustice results to the employees, and consequently we are opposed to that sort of a practice.

Regarding the question of pay, this report has the following heading, on page 215:

> Failure to substantiate the claim of having established a scientific and equitable method of determining wage rates.

On page 216 the following language is found:

> All of these systems definitely belie the claim that scientific management pays workers in proportion to their efficiency. One of them has the obvious intent of weeding out the lower grade of workers, while the other two are so constituted as to make such workers very unprofitable to the employers. Two of them lend themselves easily to the exploitation of mediocre workers—those who can deliver a medium output but can not attain to a standard task set high. All of them furnish a strong stimulus to high efficiency and output, but in themselves furnish no visible check on overspeeding and exhaustion. All of them are capable of being liberally applied, but all can also be used as instruments of oppression through the undue severity of task setting or efficiency rating.

You will note that practically every abuse we have mentioned can be affected through undue severity of task setting or efficiency rating.

Mr. KEATING. Will it embarrass you to interrupt you with questions occasionally, Mr. Alifas?

Mr. ALIFAS. Not at all. I will be very glad to answer any questions I can.

Mr. KEATING. The theory of the Industrial Relations Commission is that this machine can be used in such a way as to oppress the worker?

Mr. ALIFAS. Yes; it can be made very oppressive.

Mr. KEATING. If placed in the hands of unscrupulous or inconsiderate employers or managers the system could very well become very oppressive to the worker?

Mr. ALIFAS. It could, according to their testimony.

Mr. KEATING. And has that been your own experience with it?

Mr. ALIFAS. Yes; that has been my observation, and it has been the experience of many people with whom I have talked. I will cite an instance to you a little bit later on that has received considerable publicity.

On page 217, with relation to the question of stimulus, the following language is found:

> It must be admitted that these systems are admirably suited to stimulate the workers, but in so far as there may be virtue in the union principles of group solidarity and uniformity, and in so far as they lay claim to scientific accuracy or a special conformity to justice in reward, they must be judged adversely.

Mr. KEATING. Mr. Alifas, just on that point, how many efficiency systems are you familiar with—so-called efficiency systems?

Mr. ALIFAS. Well, I have a general knowledge of several, such as the Taylor system, the Emerson system, the Gantt system; but there are enumerable other kinds of systems; in fact, there are almost as many different kinds of systems as there are efficiency engineers. They do not seem to be able to come to any agreement as to what really constitutes scientific management. Each one calls his own system scientific and calls the other systems unscientific, possibly to the extent that they differ from his.

Mr. KEATING. Do they all adhere to the principles and teachings of Mr. Taylor?

Mr. ALIFAS. Mr. Taylor is regarded as the founder of the system, and to a greater or larger extent all those that I am familiar with hearken back to Mr. Taylor's teachings. He is regarded as the founder of the science or so-called science.

Mr. Keating. But when it comes to elaborating that science, expounding the science, the disciples differ as to method?

Mr. Alifas. They do, very materially.

Mr. Keating. Does organized labor object in any way to the standardization of tools, machines, etc., in industry?

Mr. Alifas. No, sir; they have never objected to real common sense shop management, which really is more entitled to be called scientific management. Organized labor is not opposed to industrial efficiency, but they are opposed to what these people see fit to call scientific management. It is merely a name for an ingenius set of oppressive practices.

Mr. Keating. So that in so far as this so-called efficiency system relates to the standardization of machines, tools, nuts and bolts, etc., organized labor would have no objection to that phase of the efficiency system?

Mr. Alifas. No, sir; no objection has been raised so far.

Mr. Keating. Has organized labor ever objected to the systematization of shops by which unnecessary and wasted effort is eliminated?

Mr. Alifas. They have never objected to systematization as such. I will state that they have objected sometimes to apparently innocent methods of management, but on the ground that it is the intent of the management to use those methods as a basis for oppression; that is, much the same as the public might object to a man carrying a gun, especially if he said he was going to use it, not because the gun unused would hurt anything, but because its possession furnishes a temptation to use it.

Mr. Keating. But in so far as the industrial establishments may have well-regulated planning departments proportionate to the size and nature of the shop, there would be no objection from organized labor to the systematization or the planning of the work or regulation of the shop so as to get the best possible results?

Mr. Alifas. There has been no objection to that sort of thing. Our objection has only been directed at abuses.

Mr. Keating. Your objection is directed, then, primarily to a system which unduly stimulates the worker?

Mr. Alifas. That is the idea.

Mr. Keating. So as to prevent him overexerting himself, either physically or mentally?

Mr. Alifas. Yes; that is exactly it; and in that attitude we are upheld by this report of the Industrial Relations Commission. In their conclusion they have this paragraph:

> The social problem created by scientific management, however, does not lie in this field. As regards its social consequences neither organized nor unorganized labor finds in scientific management any adequate protection to its standards of living, any progressive means for industrial education, any opportunity for industrial democracy by which labor may create for itself a progressively efficient share in management. Therefore, as unorganized labor is totally unequipped to work for these human rights, it becomes doubly the duty of organized labor to work unceasingly and unswervingly for them, and, if necessary, to combat an industrial development which not only does not contain conditions favorable to their growth, but, in many respects, is hostile soil.

I was going to mention, also, in response to a question propounded by Mr. Emery a little while ago, the attitude of the three employers on the Industrial Relations Commission with regard to scientific management. They claimed they accepted the views of Mr. Brandeis on the subject. For your information I will just read two paragraphs from the commission's report which substantially covers his attitude. Beginning on page 422, and the paragraph on the top of the next page, the language is as follows:

> With the advent of the new science of management has come the next great opportunity of increasing labor's share in the production, and it seems to me, therefore, of the utmost importance, not only that the science should be developed and should be applied as far as possible, but that it should be applied in cooperation with the representatives of organized labor, in order that labor may now, in this new movement, get its proper share.
>
> I take it that the whole of this science of management is nothing more than an organized effort, pursued intensively, to eliminate waste. It is in the process of eliminating waste and increasing the productivity of man, to adopt those methods which will insure the social and industrial essentials, fairness in development, fairness in the distribution of the profits, and the encouragement to the working man which can not come without fairness.
>
> I take it that in order to accomplish this result, it is absolutely essential that the unions should be represented in the process.

Now, that is what the employers on the commission subscribed to in toto. Taken as a whole there is no serious criticism against that. We agree that any system of management that will conserve energy and will lighten the burdens of people and will enable everybody to have more of the good things of life, and have it better distributed is a good thing. That part of it is all right, but he does not say anything here about the drastic features contemplated by the so-called Taylor system of shop management. In the first place, Mr. Brandeis calls this a "new science of management." Even supposing that it is a science of management, he says nothing about the different systems that we consider drastic. He merely contends that, assuming there is a science of management, it is in the direction of improved efficiency, just the same as a piece of improved machinery, and therefore it is good if introduced with labor having a voice in its operation.

Now, these scientific management experts want to direct their investigation and efforts only to a portion of the problem; that is, to systematizing the industry and the workmen, and to get everything out of the workmen they can, but they do not propose to investigate the entire problem to ascertain how the profits can be distributed the most scientifically. They want the employer to retain the profits of this thing, if possible, but the workmen are to do the work. Now, if they would couple these things up, and say: "We will run the shop scientifically, with the understanding that the profits of the business are going also to be distributed scientifically so that the workmen will get the benefit," then the quarrel might not exist, but they do not propose to do that. In any partnership into which two or more persons may enter there is always the understanding that the partners are going to come to an agreement as to the distribution of the profits before they can do business. If they are going to do business first, and then run the chance or have it understood that one man is going to keep for himself all of the advantages of their cooperation, there would be no business done and cooperation. In that respect there is no conflict between the view here expressed by Mr. Brandeis and the view expressed by the other members of the commission. He contends that scientific management should be managed in cooperation with the workmen, or that the employers should cooperate with the workmen, and the other members of the commission have addressed their criticism against scientific management operated automatically.

The War Department has not been willing to introduce a system mutually satisfactory. Mr. Thompson, an attorney for the commission, in conjunction with Mr. O'Leary, of the Molders' Union, and myself spent quite a little time to arrange a system of collective bargaining between the employees of the War Department and the War Department, but we disagreed at the point where the Chief of Ordnance refused to allow any differences to be determined by an outsider. He admitted that collective bargaining was all right, but he wanted to have the deciding voice himself.

That is not our conception of collective bargaining, and of course, the whole thing fell through for that reason.

Before citing the position of the Industrial Relations Commission on this question, I was stating that Senator Root, on February 23, 1915, had used before the Senate the argument that they ought to wait for the Industrial Relations Commission's report before they took action on the proposed clause in the Army bill to prevent the time study and premium system, and that the Secretary of War had taken that same position.

Mr. KEATING. Pardon me just a moment. Let me see if I catch the point you are making. Your contention is that in any efficiency system, whether scientific or not scientific, the workmen should be given an opportunity to share in the profits which result from this increased efficiency, this increased output, and that in increasing the workman's efficiency, his physical and mental well-being should be one of the primary considerations of the efficiency engineer?

Mr. ALIFAS. Yes, sir.

Mr. KEATING. In other words, that the human machine should be conserved and protected by scientific management, and that that should be one of the primary purposes of scientific management, and that a scientific management which recklessly jeopardizes the life of the human machine is a dangerous scientific management?

Mr. ALIFAS. Yes, sir.

Mr. KEATING. And that a scientific management which increases the efficiency of the worker without proportionately increasing the compensation of the worker or reducing his hours of labor is an unjust scientific system?

Mr. ALIFAS. Yes, sir; that is my position.

Mr. KEATING. But, as I understand, you have no objection to any system, whether known as a scientific system or an efficiency system, which conserves human life and which insures to the worker his proper share in the product of his toil?

Mr. ALIFAS. No, sir.

Mr. KEATING. In fact, you would welcome that kind of efficiency system?

Mr. ALIFAS. We would welcome that sore of an efficiency system.

Mr. KEATING. Becase, if some one can show you where the worker can produce more in a given time, with less effort, it would tend either to increase the compensation of the worker or to shorten the number of hours that he would be compelled to spend at his task?

Mr. ALIFAS. Yes. Now, things that we are compelled—or measures that we are compelled to oppose when we are at a disadvantage and can not protect ourselves against encroachments we might welcome if matters were so arranged that we were absolutely sure of protection.

Mr. KEATING. Well, it is your belief that when Mr. Brandeis prepared his brief that he had in mind the protection of the workers as the very first consideration?

Mr. ALIFAS. I think he did. I think he had in mind an ideal system of society where one class of people was not trying to gouge the other, where industry was going to be run for the benefit of not only the employer but the workman, and that they were all going to share in the product, and there would be such a check upon any of the abuses of management that abuses could not exist. Now, no such conditions or safeguards exist at the present time.

Mr. NOLAN. That is all right, in theory; but how does it work out in modern industrial life?

Mr. ALIFAS. It does not work out, and that is why we are trying to protect ourselves against a system of management that lends itself by its very structure to these abuses. I have not found out any way by which the scientific management exemplified in the Taylor system could be worked without jeopardizing the interests of the worker, and that is why we are opposing it now.

Mr. KEATING. In one of Gen. Crozier's statements he refers to a case where the efficiency of the worker was increased 274 per cent and his wages increased 33⅓ per cent. Would you consider that a fair distribution of the products of efficiency?

Mr. ALIFAS. No; I would not.

Mr. KEATING. You would think the worker would be entitled to a larger share of what had been produced by his toil?

Mr. ALIFAS. Certainly. I will state that a great many of the alleged economies due to scientific management at the Watertown Arsenal are due to the introduction of the use of high-speed cutting tools and the purchase of better equipment and better machinery. That is outside of the speeding-up process. Such economies can be secured without the introduction of the speeding up of the workmen process, or the premium system and the stop-watch time study. It does not require time study to use high-speed steel. We have had high-speed steel in the machine shops all over the country for a number of years, and my understanding is that the Watertown Arsenal before they started to introduce scientific management was in a very run-down condition and that it was not up to the standard of ordinary management, and therefore by introducing an intense system of management the difference between the output before and after the introduction of the system was very marked. Ordinary care would have possibly resulted in the saving the major portion of the alleged saving due to the introduction of their system.

Mr. NOLAN. I think you will find, Mr. Alifas, under Gen. Crozier's testimony before the committee in the Sixty-third Congress an admission that a great deal of credit, as far as the increased production in the Watertown Arsenal was concerned, was due to the fact that they systematized the work and introduced modern methods and modern facilities; but on my asking the question as to what percentage of this increased production was due to that and what increased production was due to the stop-watch and time-measuring systems he could not answer that question, but he did given considerable credit for the increased production to methods that are not objected to by the employees and that you yourself say are welcomed.

Mr. ALIFAS. Yes.

Mr. NOLAN. So that he, while not giving us the percentage of it, admitted that a great deal—that is, that considerable credit—was due to systematizing the work up there, as well as the introduction of new methods in the various departments, so that the very point you are making there is admitted by Gen. Crozier regarding that Watertown Arsenal.

Mr. ALIFAS. In the report of the Chief of Ordnance for the fiscal year 1911, on page 16, is found the alleged savings on two different kinds of materials manufactured at the Watertown Arsenal, and upon being questioned as to the details of these savings during the investigation that was made by the special committee of Congress in 1912, the information was elicited that one of the biggest items of savings was in the saving of material. It was claimed that they had saved half the material by the system. Now, that is a manifest absurdity. You could not save half the material in an industrial plant. Where does the rest of the material go to? Certainly nobody carries it home. The chances are that pieces of material secured for previous jobs were used in part, and then were thrown aside, and during the time that they were trying to show that their system was efficient, they would pick out all of these small pieces of material from under the benches, and out in the yard, and use them on the work they were doing, and not charge it up to the job. That was credited to the saving of the system, but after all that material was worked up, that sort of saving would cease, since manifestly they could not continue the process of finding material indefinitely. That kind of saving would come to an end when the material that is laying around loose was used up.

Mr. KEATING. Are you a practical machinist, Mr. Alifas?

Mr. ALIFAS. Yes, sir. I have served in the War Department alone for seven years.

Mr. KEATING. When you were learning your trade, did any one show you how to go about your task in the most efficient fashion?

Mr. ALIFAS. No, sir. If I recollect the temper of the competent machinists right in shops when I worked at the trade outside of the arsenal, if the boss had attempted to come around and pull you by the sleeve and tell you how to handle your work, there would be likely to be trouble started right there. A machinist felt that he knew his business, and he did not want anybody to be instructing him continually how to do his work, as though he were an apprentice. It was resented.

Mr. NOLAN. But I understood the question of the chairman to be when you were serving your appenticeship at the machinist trade.

Mr. ALIFAS. Did you say apprenticeship?

Mr. KEATING. Yes; when you were learning your trade.

Mr. ALIFAS. If I had instructors?

Mr. KEATING. Yes.

Mr. ALIFAS. Oh, yes; an apprentice is always instructed on the different classes of work and machines, during his apprenticeship.

Mr. KEATING. And in those shops they had superintendents who planned work, and selected the best tools with which to do the work, and if their employers consented, got improved and up-to-date machinery, so as to increase the output of the plant?

Mr. Alifas. Yes; the foreman was around the plant continually, devising improved methods, and at times suggesting different things to the workmen to facilitate and expedite their work. It was usually done in a diplomatic way; but he did not presume to interfere with all of their movements, such as a time study or motion study contemplates.

Mr. Keating. But so far as "systematization" and "standardization," and "routing" and "planning," and these various other terms which make up the language of efficiency or scientific management are concerned, all those processes, while perhaps described by some other name, were known to industry long before Mr. Taylor formulated his system. That is, you systematized work, you standardized work, and you planned work, and you instructed the apprentices as to how to proceed with a certain line of work long before scientific management was brought into existence?

Mr. Alifas. Oh, yes; but one difference was that they did not put it on paper, and did not hand it to the workmen on a sheet of paper. The foreman was not so much of a clerk as under the new system. He practically did all of his routing and planning, except it was not put down on paper. He kept in close touch with his job.

Mr. Keating. Pardon me for interrupting you.

Mr. Alifas. Now, a great deal has been said by different witnesses, including the Chief of Ordnance, about the report that was made by the special committee of Congress investigating the Taylor system. They say that the committee recommended no legislation. I would like to read you the clause that they refer to. It is on page 7 of this report:

> The selection of any system of shop management for the various Government works must be to a great extent a matter of administration, and your committee does not deem it advisable nor expedient to make any recommendations for legislation upon the subject at this time.

Now, further down in their conclusions and recommendations, they say as follows:

> Fourth. The management should put forth every effort to invite and induce full cooperation between the working force and themselves, and should, therefore, deal with the working force in the most open, frank, and candid way, affording the fullest opportunity for consultation and explanation in advance of proposed action affecting the interests of the workmen. Stop-watch time study should not be made of workmen without their consent or any conditions be imposed upon them by authority which imply any indignity; piecework may be introduced where the work to be performed is a continuous duplication, but with the express understanding that piecework rates shall not be cut unless the conditions of production are materially changed; in other cases the rate should be a straight day-wage rate at the highest prevailing rate for a similar class of work in the neighborhood where the Government work is to be performed, except that by mutual consent bonus and premium work may be introduced, but only with scrupulous care that the workman shall have full opportunity for increasing his earnings without risk of overstrain, for collective bargaining if he should so desire, and for easy and direct appeal to the management in any cases where he may think his interests threatened.

Now, after that committee reported I asked different members of the committee what they meant by the expression that they "recommended no legislation at this time," and whether they individually would recommend legislation at some future time. The information I received from these members was that they thought the advice given to the Ordnance Department in their report would be followed out; they thought this was not a matter of legislation, but was a matter of administration, which was difficult to reach by legislation; and they believed, as I was informed, that the War Department would follow their advice. Now, the War Department did not follow their advice; and since they did not, members of the committee informed me later that legislation would be proper under those circumstances. We took steps immediately to find out whether the War Department was willing to live up to the sense of this report. The War Department said they were not prohibited from going ahead as they saw fit, or words to that effect, and did not propose to abide by the recommendations unless it was followed up by legislation. We then proposed legislation, and that is why this legislation is before Congress at the present time.

We have had investigations, and plenty of them. My impression is that the officials who desire to continue this system still want further investigations. Now, there is absolutely no legitimate object in continuing one investigation after another unless it is proposed to take some action after each investigation. Now, the investigation asked for by the War Department has been concluded, and regarding which they have intimated that they would follow the conclusions reached. They have not done this. It seems to me it would not serve any good purpose to have any further investigation; some action should be taken by Congress based on the several investigations already made.

Another reason for not continuing any further investigation is found in the last report of the Chief of Ordnance for the fiscal year 1915, on page 17, where he says:

> I can not say that any new evidence has made its appearance in the operations which have gone on since the submission of my last annual report; but I can say that all the advantages which had theretofore shown themselves have continued to prevail, and the spirit of cooperation and cheerful industry which has shown itself in the everyday conduct of the Watertown Arsenal leaves little to be desired.

This would argue that there is no necessity for any further investigation. He says there is no new evidence. Consequently, if there is no new evidence, there is no necessity for further consideration by way of investigation.

Now, the quotation just cited was incorporated in the report which was signed by the Chief of Ordnance on October 1, 1915. It is stated here that a "spirit of cooperation and cheerful industry" prevailed at the Watertown Arsenal. I would like to explain to the committee just how cheerful that cooperation was at that writing. On August 4, 1915, a couple of months previous to the writing of this clause that I have read, there was submitted to the Chief of Ordnance a petition by a representative committee of the machinists at the Watertown Arsenal, protesting against the continuance of the Taylor system in the face of the legislation that was passed last year. It was accompanied by a request for an increase in wages.

To show that an increase in wages was justified, I will just cite here that there is at the present time a bill before this committee, a minimum-wage bill, providing for a minimum rate of $3 a day for all employees, regardless of whether they are mechanics or laborers. The average wage at that time at the Watertown Arsenal in the machine shops was $3.13. That is only 13 cents higher than this committee is urged to provide for every laborer in the Government service. I will say that some years ago a laborer was paid $1.50, while a machinist was paid $3. That was about the general proportion. The machinists at the Watertown Arsenal are getting only 13 cents more than many Members of Congress believe a laborer ought to get.

Mr. NOLAN. Let me ask you, Mr. Alifas, does that apply to the whole arsenal, or does it apply only to the machine shop?

Mr. ALIFAS. Only to the machine shop.

Mr. NOLAN. When was that average made?

Mr. ALIFAS. That average was ascertained by an investigator on behalf of the Dapartment of Labor, who went up there to investigate wages at the arsenal, and wages on the outside.

Mr. NOLAN. How long ago?

Mr. ALIFAS. He made his investigation along about October or November of 1915. I think it was in November.

Mr. NOLAN. This investigation was made since the introduction of the Taylor system up there?

Mr. ALIFAS. Yes, sir.

Mr. NOLAN. This average wage that is being paid now?

Mr. ALIFAS. Yes.

Mr. NOLAN. With all of the bonus and premiums that these men have been earning?

Mr. ALIFAS. No; that is outside of the bonus and premium.

Mr. NOLAN. That is for the day workers?

Mr. ALIFAS. That is for the day workers; yes, sir. That is the average day rate, and what they get, including their premium and bonus, and all, is not any more than we consider machinists in private industry in Boston, and machinists at the Boston Navy Yard are getting for straight day work. At the same time, an investigation was made on behalf of the machinists employed at the Boston Navy Yard, which is in the same vicinity, and we secured an average there of $3.84. That is 61 cents higher than the average prevailing at the Watertown Arsenal, where this scientific management is in operation.

Mr. VAN DYKE. How many men have you got working in the navy yards and arsenals in the United States?

Mr. ALIFAS. There are pretty close to 5,000 in my organization, and that is perhaps 90 per cent of all of them.

Mr. NOLAN. That is, all machinists?

Mr. ALIFAS. It is only machinists I am talking about.

Mr. VAN DYKE. I mean all employees in the navy yards and arsenals who would come under the provisions of this act, or who would be directly affected by the provisions of this act?

Mr. ALIFAS. Now, there would not be very many affected directly. They would be affected indirectly by being relieved from the possibility of having to work under these systems. There are only about 600 employees that are actually working under this system, but about 35,000 people in the navy yards and arsenals will be subject to working under the Taylor system if this act is not passed.

Mr. VAN DYKE. They might be, if the act was not passed?

Mr. Alifas. Yes.

Mr. Van Dyke. There might be subject to working under the Taylor system, you say, about 35,000 of them?

Mr. Alifas. Yes.

Mr. Van Dyke. That includes all the machinists and laborers in the navy yards and arsenals in the United States?

Mr. Alifas. Yes.

Mr. Van Dyke. Outside figures?

Mr. Alifas. Yes.

Before we started on this colloquy I was outlining the state of affairs that existed at the Watertown Arsenal. The Chief of Ordnance, in his report of October 1, 1915, says that they are cooperating cheerfully up there and there is a fine sprit of harmony prevailing at the arsenal. Now, this request for the discontinuance of the Taylor system and an increase in wages was the precursor of a very serious situation; that is to say, on August 31 I received a communication from our international president that he had received from a committee at the arsenal a letter asking that they be permitted to strike in the event the Government officials did not see fit to grant their demands. I will incorporate that letter in the hearings at this point.

Mr. Keating. Without objection, it will be inserted in the record.

Mr. Alifas. It will not be necessary for me to read it. The substance of it is that they request him to allow a strike to be called in the event they do not secure satisfaction.

(The letter referred to is as follows:)

23 Charles Street,
Auburndale, Mass., August 31, 1915.

Mr. William H. Johnston,
International President I. A. of M.,
402–407 McGill Building, Washington, D. C.

Dear Sir: Since our communication was forwarded to the Chief of Ordnance, William Crozier, pertaining to the abolishment of premium or rate system of payment, according to the latest returns, there has been no settlement.

I take pleasure in announcing to you that the machinist representatives of Arsenal Lodge, No. 150, also the representatives of Boston Lodge, No. 264, desire to place this matter in your hands for a settlement. It is needless to say that we have worked very diligently on this matter ourselves, and we have cooperated with the other departments for a settlement.

* * * * * * *

I have been advised to ask your permission to take a walk-out vote, as now is the accepted time for this action, and report back to you the result of the vote, which no doubt proves to you just exactly how we feel.

We have organized the machinists of this arsenal to better our conditions and for the purpose of discontinuing the premium system of payment and be returned to a daily wage, which is stated on the copy which was recently forwarded to you.

We sincerely hope that you will take immediate action on this matter.

Yours, respectfully,

M. W. Bowen,
Chairman Machinist Committee.

Mr. Keating. What percentage of the employees were represented by this suggestion?

Mr. Alifas. About one-third; that is, one-third of the whole arsenal, but practically all of the machinists at the arsenal; one entire department. There was very little dissent among the machinists in the department.

Mr. Keating. The Taylor system was in force in this department?

Mr. Alifas. Yes, sir.

Mr. KEATING. These men who protested were in a position to gain the benefits of the bonus and the premium system, were they?

Mr. ALIFAS. Yes, sir. The men have taken the position up there that they do not want the premium and bonus. They would rather have the straight day work and get away from the system than to work under the system and get the premium and the bonus. Of course, they feel that they have been paid abnormally low. One of the features that is ascribed to scientific management is that under it employers aim to set the day wage sufficiently low to make the premium system attractive to the worker. In the event the premium system were abolished the day rate would, of course, have to come up in order to hold the men.

Mr. NOLAN. Right there, Mr. Alifas, is it not a fact, and I believe it has been so testified to by Gen. Crozier, that prior to the installation of this Taylor system up there, that there were only 10 men in the first class, of all the high skilled mechanics among the machinists in that arsenal?

Mr. ALIFAS. Yes; I believe so.

Mr. NOLAN. And that they never let any more than 10 men get into that class; and their wage, I think, at that time was $3.54 a day.

Mr. ALIFAS. Yes; $3.52.

Mr. NOLAN. $3.52. They never gave them an opportunity, no matter how well skilled they were, to get into that class, and put a limit of 10 men on it.

Mr. ALIFAS. Yes; I think that was the arrangement.

Mr. KEATING. Was that a provision of the law?

Mr. ALIFAS. It is not the law, but that was the practice at the arsenal.

Mr. KEATING. Before they put in the Taylor system?

Mr. ALIFAS. Yes; and that largely prevails there at the present time. They have a very small proportion of the men at the top rates. Their theory seems to be to have as much work as possible done by cheap men.

Shortly after that I received a letter from the employees there. I will state that before I received this letter I had communicated with the employees, asking them what was being done on the Taylor system, and if the legislation that had been passed by Congress had had any effect on the system. In the letter I received from the Secretary of our organization there, in response to my inquiry, is the following language. I do not desire to read the whole letter:

> You asked in your telegram concerning the premium system in the shop. We have the Taylor system as completely as ever, with the exception of the stop watch. The rate setters set the rate in the office. They still stand over a man all day with a block of paper and a pencil, but call it observing instead of time study. They have eliminated the watch.

That was the status at that time, on August 2, 1915.

On October 18, 1915, I received this communication. The sending of this letter was due to the fact that a certain efficiency engineer in Boston had sometime before that been given authority to represent the men on the supposition that he was going to assist them in throwing out the Taylor system, including the time study and the premium system; but when our legislation was pending in the Senate he wrote to the junior Senator from Massachusetts stating that he was authorized by the employees to oppose the legislation directed against the stop watch and the premium system, and upon finding out that he differed with the employees and might be called to task for not carrying out his agreement, he resigned as their counsel; so in order that there might be no dispute as to who had authority to represent them in Washington they wrote me this letter. I will incorporate the letter in the hearing. It merely indicates that they gave me unqualified authority to represent them in Washington on these matters:

Mr. ALIFAS. This letter follows the language of a previous authorization and includes the Industrial Commission, which had finished its work, but the employees doubtless thought the commission still had some work to do.

Mr. NOLAN. Did I understand there that this man was supposed to represent them in opposing the stop-watch, the time-study, and the bonus and the premium systems?

Mr. ALIFAS. Yes, sir.

Mr. NOLAN. And then wrote to Senators stating that he was not opposed to it?

Mr. ALIFAS. Yes, sir; and that he had authority to state for the employees that they were opposed to the pending legislation.

Mr. KEATING. Without objection, the letter will be inserted in the record.

(The letter referred to is as follows:)

INTERNATIONAL ASSOCIATION OF MACHINISTS,
OFFICE OF RECORDING SECRETARY,
11 Fairfield Street, Watertown, Mass., October 18, 1915.

To whomsoever it may concern:

This is to certify that Mr. N. P. Alifas, president of district 44, International Association of Machinists, is authorized and empowered hereby to represent the machinists employed at the Watertown Arsenal, who are members of Lodge No. 150, International Association of Machinists, which lodge is composed of approximately 90 per cent of the machinists employed at the Watertown Arsenal.

Particularly is he authorized and empowered to represent them before the Federal Commission on Industrial Relations and Congress on matters relating to the Taylor system of shop management as in operation at the Watertown Arsenal, or any other system of shop management.

Very respectfully,

[SEAL.]

JOS. P. LARKIN,
Recording Secretary.
F. A. HOLWAY,
President.
M. W. BOWERS,
C. E. GULBRAND,
MAURICE J. LYONS,
S. G. HALBERG,
H. H. BEATON,
Committee.

Mr. ALIFAS. Now, along about that time I was having some correspondence with the Secretary of War, to see what could be done toward getting the restrictive clause in the Army bill applied to the Watertown Arsenal. I urged that the War Department should observe the spirit of the legislation, regardless of whether it applied to all the appropriations that were available for their use, or not. On account of this matter pending before the War Department, I urged the employees not to strike, at least until we had an opportunity to see what the Secretary of War would do about it, and they held this matter off. It was not until the 1st of January that I was unable to get them to hold off any longer. On that date they took a strike vote. The strike vote resulted in a large majority favoring a strike, but not a sufficient proportion of the men favored this plan to warrant a strike being called. That was due to the fact that some of the men thought it was better to wait and see what the War Department was going to do about this thing; and some of them thought this matter could be straightened out in some other way besides striking; so the strike was not actually called.

Mr. KEATING. You mean on January 1 of this year?

Mr. ALIFAS. On January 1 of this year, 1916. All this trouble was brewing at the time the Chief of Ordnance claimed there were perfectly harmonious relations existing between the management and the employees at the Watertown Arsenal. One of the reasons that may have deterred some of the men from voting for a strike was that for their protection I had been obliged to supply them with information as to restrictions of law against striking in the Government service. I had secured from the Secretary of Labor the provisions of law on strikes in Government shops, and I presented all that information to them in order that the employees should not be charged with violations of the law. There was no prohibition in law, in my judgment, against striking in the Government arsenals, but I wanted to have them be on the safe side, so I sent them that information. That may have had a bearing, however, on their decision not to strike at that time.

Mr. VAN DYKE. They were not classified civil service employees?

Mr. ALIFAS. Yes; they are.

Mr. NOLAN. Mr. Alifas, right there, is it not a fact that all men in the Government service, mechanics in the Government service, as well as the organization that they belong to in the Government service, hesitate a long time before striking in Government shops, whereas in private employment they would not hesitate nearly as long as they do in the Government shops?

Mr. ALIFAS. That is very true, Mr. Nolan. If that had been a private shop, I imagine we would have had a strike five years ago; and it would have come to a show-down whether they were going to have scientific management or not; but all American people feel that the Government is going to be just eventually, if they can only wait long enough to get the Government to take action; and merely because some of the officials of the Government are unyielding is not an indication that the entire Government is going to be unyielding. The employees have waited for a long time to get either the department or Congress to take action on this matter, and they are still waiting.

I would like to submit for the record here the correspondence I have had with the Secretary of War on this subject, which is now completed, the Secretary having recently resigned, much to our regret, since he was fair in most matters.

Mr. KEATING. Without objection it may be inserted in the record.

(The correspondence referred to is as follows:)

MAY 4, 1915.

Hon. LINDLEY M. GARRISON,
Secretary of War, Washington, D. C.

DEAR SIR: According to press reports which appeared shortly after the close of the Sixty-third Congress, Brig. Gen. William Crozier, Chief of Ordnance, is credited with saying in effect that it is his intenton to continue the premium system at the Watertown Arsenal, because the clause in the Army appropriation bill prohibiting time study and premium payments does not prevent him from using the funds in the fortification appropriation bill for that purpose.

Subsequent to the appearing of these press reports, I had an interview with the Chief of Ordnance, and urged that the evident intent of Congress in passing this legislation be given its due weight and that the objectionable features of the Taylor system be eliminated.

I learned that the Chief of Ordnance intended to continue as much of the Taylor system at the Watertown Arsenal as a literal interpretation of the clause in the Army bill would permit. In his opinion it seems that the department is permitted to continue the premium system. The reasoning of the Chief of Ordnance appears to be about as follows: The restrictive clause in the Army bill applies only to appropriations contained in that bill; and does not affect any money that is provided in other supply bills; consequently, since most of the money spent at the Watertown Arsenal is provided through the fortification appropriation bill, the premium system can be continued from such funds, because the fortification bill does not contain the clause prohibiting time study and premiums. However, the time study will be discontinued, due to the fact that the Army bill provides the funds for the payment of the officers' salaries and a time study could not be made without the sanction of officers of the department.

We believe, however, that some attention should be paid to the spirit of this legislation, and to the evident intent of Congress, and the effect that the restrictive clause in the Army bill was expected to have; and we most earnestly appeal to you from the decision of the Chief of Ordnance and urge that the time study and premium system be discontinued by the Ordnance Department in all of its arsenals not later than July 1, 1915.

The debate in the Senate on February 22 and 23, 1915, indicated that both proponents and opponents of this anti-Taylor system clause were under the impression that if the clause passed it would prohibit these practices in the Government arsenals for at least one year. This impression was encouraged by the action of the Chief of Ordnance in discontinuing time study and the premium system at the Frankford and Watertown Arsenals immediately upon the passage of the Army bill by the House, and also by the language in communications forwarded to Members of the Senate by the Chief of Ordnance and the Secretary of War, as the following will show. On January 25, 1915, the following notice was posted on the bulletin boards at the Watertown Arsenal:

"Memorandum: In compliance with instructions from the Chief of Ordnance, all time study will cease; also all premium payments except such as have accrued at the time of this notification.

"C. B. Wheeler,
"*Colonel, Ordnance Department, Commanding.*"

This notice was inserted in the Congressional Record by Senator Weeks, of Massachusetts, on February 23, 1915, during his remarks on the clause in the Army bill.

In addition to the remarks made by Senator Chamberlain, chairman of the Committee on Military Affairs of the Senate, relative to the clause prohibiting time study and the premium system, he inserted several letters and documents submitted to his committee by the War Department on the subject. The following letter under date of January 30, 1915, addressed to the Secretary of War by the Chief of Ordnance, leaves the impression that the passing of the proposed clause would prohibit time study and the premium system at the arsenals. Please note the parts in italic:

"Ordnance Office, *January 30, 1915.*

"To the Secretary of War:

"1. The legislation referred to in this petition is contained in a proviso of the Army bill (H. R. 20347), which passed the House of Representatives on January 22 and is now pending in the Senate. The language referring to the class of payments which have been suspended at the Frankford Arsenal is the following:

"'* * * Nor shall any part of the appropriations made in this bill be available to pay any premium or bonus or cash reward to any employee in addition to his regular wages, except for suggestions resulting in improvements or economy in the operation of any Government plant; and no claim for services performed by any person while violating this proviso shall be allowed.'

"2. As the legislation is claimed by its proponents in the House of Representatives to be in the interest of the workmen who would be affected by it, I have considered it but just to *all such workmen* that they should have warning as to the effect of the measure in case it should be enacted into law. *I have therefore given the same effect to the prohibition that it would have if it became law by directing that all premium payments, except such as have already accrued, shall cease at the arsenal.*

"William Crozier,
"*Brigadier General, Chief of Ordnance, United States Army.*"

The language contained in the last two sentences, when compared to the notice posted at the Watertown Arsenal, shows a striking similarity and indicated that the Chief of Ordnance wanted to impress the Senate with the idea that if the restrictive clause was passed the full force of its provisions would apply to the Watertown Arsenal.

Two other letters submitted by Senator Chamberlain indicate that the War Department wished the impression to prevail in the Senate that if this anti-Taylor system legislation were passed it would prohibit time study and the premium system at the Watertown Arsenal. The letters are as follows:

"War Department,
"*Washington, January 30, 1915.*

"The President of the Senate.

"Sir: In the Army appropriation bill (H. R. 20347), which passed the House of Representatives on the 22d instant, there occurs the following legislation, added as an amendment upon the floor of the House:

"'*Provided*, That no part of the appropriations made in this bill shall be available for the salary or pay of any officer, manager, superintendent, foreman, or other person having charge of the work of any employee of the United States Government while making or causing to be made, with a stop watch or other time-measuring device, a time study of any job of any such employee between the starting and completion thereof, or of the movements of any such employee while engaged upon such work; nor shall any part of the appropriations made in this bill be available to pay any premium or bonus or cash reward to any employee in addition to his regular wages, except for suggestions resulting in improvements or economy in the operation of any Government plant; and no claim for services performed by any person while violating this proviso shall be allowed.'

"The purpose and effect of this amendment is to prevent scientific management in the branch of the business of the Government which is affected by it. Surely this is a subject matter of great importance and should be dealt with directly and only decided after careful investigation and deliberation. It was not relevant to any matter contained in the Army bill, was not brought up in the hearings before the committee in the House so that both sides might receive full opportunity to present facts and reasons, and did not and could not receive full consideration under the circumstances, and when the amendment as adopted was presented to the bill on the floor of the House. Under the circumstances I feel that it is my duty to call the attention of the Senate to the situation, so that they shall not vote thereon in ignorance of the importance of the subject matter.

"This question has been agitated for some time past, and when brought to my attention I requested the Commission on Industrial Relations to carefully investigate this whole subject matter with a view to reaching a proper conclusion thereon. This matter is one peculiarly within the scope of the jurisdiction of that commission. Just what they have done as yet in the matter I do not know, but I feel very strongly that the reasonable course to pursue would be to await their action and determination. If for any reason the Senate does not feel inclined to accept this suggestion, I most earnestly request that a hearing be accorded upon this subject matter, so that all the facts and reasons which should be known to the Senate may be developed before the Senate finally concludes the matter.

"*With a view of acquainting the Senate somewhat more with the details of the situation, I have caused the Chief of Ordnance to prepare a statement, which accompanies this.*

"Very respectfully,

"Lindley M. Garrison,
"*Secretary of War.*"

"Memorandum for the Secretary of War.

"WAR DEPARTMENT,
"OFFICE OF THE CHIEF OF ORDNANCE,
"*Washington, January 29, 1915.*

"Subject: Legislation in bill H. R. 29347 against time study and premium payments at Government establishments.

"1. The prohibition of this legislation relates to two features of the system of scientific management which has been in practice at the Watertown Arsenal, Mass., for something over five years. The first feature which is prohibited, time study, is a method of determining by careful study the best manner and sequence in which a given piece of work shall be done, the most advantageous way in which its expeditious performance can be accomplished, and the time in which it can reasonably be expected to be done. Based upon the results of time study, an instruction card is issued to any workman who may be engaged upon the work studied, and he is told that if he follows the instructions carefully and industriously he can probably do the work in the time which has been arrived at, and in that case he will be given a premium over and above his regular wages amounting to one-third of these wages, or a less premium for measurably approaching this time; his regular wages not being subject to reduction in any case, being fixed at a prevailing rate of the vicinity for work of like character. This payment is the second feature which is prohibited by the legislation in the bill. No watch is held over a workman otherwise than during the time study mentioned, and no workman is subjected to any timing process for the purpose of ascertaining whether he is working industriously. Time studies are made only occasionally, and as information accumulates which is available for use in arriving at the time in which work can reasonably be done, its employment is of diminishing frequency. All allowances are made so as to insure that work shall not be expected at a rate which is irksome, or even disagreeable, to the workman.

"2. There are other important features of the system of management which relates to systematization, orderly procedure, and efficient arrangement, not having relation to the care and attention which is expected from a workman or to any stimulus to industry upon his part; but the features now proposed to be prohibited are the only ones by which the workman is let in to a share in the economy which results from better management accompanying the system.

"3. A monthly report is made from the Watertown Arsenal of the amount of work which has been done upon the premium system and the premiums which are earned thereon. The latest report which has been received, which is for the month of November last, shows that 33 per cent of all the work done at the arsenal in that month was in accordance with this system, and that the total amount of premium was $2,519.69. The shop in which were the greatest number of men who had premium work was the machine shop, and in this about 70 per cent of all the work done was on the premium system, and the average premium earned by the machinists for the time they were working on premium jobs was 24.12 per cent of their regular pay. It will be observed that the premiums paid during this period were at the rate of about $40,000 a year, and as there are in the neighborhood of 600 employees at the arsenal it follows that the wages of all were increased on an average of about $66 a year. Premium payments, but not time studies, are made also at the Frankford Arsenal in Philadelphia, Pa.; and at that establishment these payments amount to about $45,000 a year. As stated above, these premiums are over and above the regular day wages of the employees, which are fixed by the rule that they shall be the same as those paid in the vicinity for work of like character, and which have not been diminished since the commencement of the application of the premium system of payment; so that the charge that this system results in a demand for higher speed on the part of the workman without any ultimate increase of wages has no foundation in the now well-established practice at these arsenals. I inclose a copy of the report from the Watertown Arsenal which is referred to in this paragraph, which shows the name of every workman who was employed upon a premium job during any part of the first 23 days of last November; the time which he worked upon such job; the amount of premium which he earned; and the ratio which this premium bore to his regular wages. There is also shown the average premium earned in each shop and the percentage of the total work in the shop which was done under the premium system. It appears that the total sum paid in premiums during these 23 days (19 working days) was $2,519.69; that the total number of employees who received premiums was 340; so that the average premium earned by each was $7.41, and the average daily premium $0.39 each.

"4. The workings of the system, the economies effected, and the advantage to the workman are set forth in the reports of the Chief of Ordnance for the years 1911, 1912, 1913, and 1914. The extracts from these reports for the years 1911 and 1912 which relate to this subject are published in an appendix to the report of the Chief of Ordnance for the year 1913, together with certain petitions of a number of the workmen at the Watertown Arsenal against this system, and the replies of the Chief of Ordnance thereto. A copy of this appendix is inclosed herewith, and there are also inclosed copies of the reports for the years 1913 and 1914. *I invite special attention to these reports, as the subject can not be fully understood without knowing what is in them. They exhibit a high degree of advantage for the workman and such economy of manufacture for the Government that it seems inevitable that, if the economy is reduced, as it appears certain that it will be if the proposed legislation becomes effective, larger sums will be required for the operation of the arsenals.*

"WILLIAM CROZIER,
"*Brigadier General, Chief of Ordnance, United States Army.*"

Judging by the remarks of the principal opponents in the Senate to the anti-Taylor system clause, they were under the impression that if this clause were enacted into law the features it prohibited would not be permitted in the arsenals for at least one year.

On page 4890 of the Congressional Record of February 23, 1915, in answer to a question by Senator Hughes as to whether the system had not already been abolished at the Watertown Arsenal and quoting the notice posted at the Arsenal dated January 25, 1915, Senator Weeks remarked in part as follows:

"Mr. WEEKS. Well, Mr. President, it would seem from the date which the Senator has given us that the action taken by the Chief of Ordnance must have been taken after or at about the time the Army appropriation bill was acted on by the House of Representatives, and he may have considered, in view of the action taken by that body, that *it was best to suspend what the House evidently desired should be suspended until the Senate had acted.* I did not know that that had been done."

Please note the italic portion of his remarks.

In commenting upon a letter Senator Weeks had received protesting against the passage of the clause in the Army bill, he has the following to say, the italicized portion of which indicates that he believed the Watertown Arsenal would be affected by the proposed legislation:

"John Driscoll is a resident, I think, of Brighton. Mr. Chipman is an organizer of efficiency methods, a resident of Cambridge, and writes that he is representing 221 of the machinists employed in the Watertown Arsenal. There are 666 men, or about that number, employed there. Not all of them are affected by the operation of this provision, so that Mr. Chipman undoubtedly represents a very large proportion of the men employed at the Watertown Arsenal *who are affected by the provision.* This is the letter that Mr. Driscoll writes to Mr. Chipman."

The action of the Chief of Ordnance in discontinuing the time study and the premium system at the Frankford and Watertown Arsenals after the clause in the Army bill had been passed by the House would indicate that if that clause was enacted into law that it would have the effect which he had thus given it previous to its passage.

The debate in the Senate indicated that both opponents and proponents of the proposed legislation were of the opinion that if this clause in the Army bill were passed that it would cause the War Department to discontinue the practices prohibited throughout the entire service, although everyone was no doubt perfectly aware that the clause was not universal in its scope, if taken literally.

With the probability thus plainly in view, that if the proposed legislation were allowed to remain in the bill that time study and premium payment would be discontinued for at least one year, the Senate nevertheless allowed the clause to become law; and we therefore submit that if the War Department permits the Chief of Ordnance to continue these practices at the Watertown Arsenal it will be contrary to the wishes and the expectations of Congress.

We believe that Congress has expressed its wishes on this subject with sufficient clearness to warrant the War Department in taking the matter seriously even though the legislation does not amount to substantive law. The rules of the House and the Senate are such that a clause which aimed to limit the uses of other funds than those contained in the particular appropriation bill to which it was applied could not be incorporated without unanimous consent, since a point of order raised by any one Member of the House or any one Member of the Senate would defeat the proposition.

Owing to the fact that the funds in the fortification bill of last year are available until expended, it might have been possible for the Ordnance Department to have evaded the antitime study and premium system clause by means of a literal interpretation even though it had been included in every one of the 15 appropriation bills; because money might have been saved out of that appropriation with which to continue the prohibited practices for another year. It was therefore felt that one emphatic instruction from Congress to the War Department ought to be as binding upon that department as several more of the same kind. It was believed that the department had sufficient respect for law and the evident intention of Congress not to avail itself of technicalities for the purpose of evading the intent of the law.

The utterances of the Chief of Ordnance during the hearings before the special committee of the House of Representatives, during 1912, indicated that he would not further force this system upon the employees of the Government if he learned that continuous objection was going to be made to it. His attitude up to the time of the close of the Sixty-third Congress appears to have been that he would discontinue the system as soon as some definite action had been taken by Congress in that direction, and his present intention to go as far as the letter of the law will permit is entirely out of accord with the position it was generally assumed that he had taken.

During my discussions with you some time ago on this subject, you reminded me that there might be some precedent for the position taken by the Chief of Ordnance in the position which the President of United States is alleged to have taken with reference to a clause in the sundry civil bill of June 23, 1913, which prohibited funds therein contained for prosecuting violations of the Sherman antitrust law from being used for the purpose of prosecuting labor unions. The President is supposed to have felt warranted in signing that sundry civil bill only because of the availability of funds from other appropriations for the purpose of prosecuting labor unions in case they should violate the Sherman antitrust law. Permit me to call your attention to the difference between the position taken by the President of the United States at that time and the present position taken by the Chief of Ordnance: The President was confronted with the duty of prosecuting anyone that violated the Sherman antitrust law, and the decisions of the court at that time had included labor organizations within the scope of the law, consequently there was nothing for the President to do but to continue such prosecutions. On the other hand, the sundry civil bill of June 23, 1913, prohibited the use of any of the funds therein contained for the purpose of prosecuting labor unions under the Sherman antitrust law. However, it did not repeal any portion of the Sherman law which required such prosecutions to be made. The President, therefore, in order to live up to the law in both respects, would be required to prosecute all violations of the law according to the interpretations placed upon it by the courts, but he would not be permitted to use any of the funds appropriated that year for the purpose; so that in order to carry out his duties he would be obliged to use other funds if they were available for the purpose of prosecuting the labor unions.

In the case which is coming up for the decision of the War Department relative to the enforcement of a clause in the Army bill intended to prohibit time study and the premium system, the War Department is under no obligation to continue the Taylor system. There is no law that requires the Taylor system to be installed, and whether or not it is to be continued is purely optional with the War Department. Consequently, when Congress passes a law prohibiting certain features of the Taylor system from being used, when it is clearly evident that the only reason why the legislation was not made substantive law and of universal application, was due to the fact that it would have practically required unanimous consent to have it so framed, it seems to us that it becomes the duty of the War Department to heed not only the letter of the law but the spirit of it.

In order to further show that the War Department should observe the spirit of this legislation, permit me to call your attention to the position the department took with relation to certain orders that have been promulgated for the guidance of its employees. Mr. Charles C. Anderson, a machinist, employed at the Rock Island Arsenal, was severely disciplined for an alleged violation of a shop regulation. The shop regulation read as follows:

"Officers and employees of the Ordnance Department are prohibited from exhibiting any drawings, statements, or papers belonging to the official records of the establishment to which they are attached, or giving any information, copy, or extract from the same, or any information respecting the business of the departments to any person whatever, without in each case, an order from the Chief of Ordnance."

This regulation prohibits only *the giving out of information.* It does not prohibit *the asking for it.* However, that distinction did not appear to have any weight with the department in its conclusions. The department contended that the spirit of this regulation had been violated, and I would say that if this were our only defense in this case, our position would have been a weak one. Without entering into the merits of the Anderson case at this time, the point I desire to bring out is that the department does not approve of the practice of employees caviling in the wording of the department's regulations for the purpose of ascertaining if there be not some other way of doing the same thing that the regulations are intended to prohibit; and it treats violations of the spirit of its regulations the same as if the violations were direct.

The employees at the arsenals, with few exceptions, are opposed to the Taylor system, particularly the time study and the premium features.

During my visit at the Watertown Arsenal, the latter part of last month, the opposition to the time study and the premium system was practically unanimous, and they are patiently waiting for the 1st of July to arrive when it is hoped that time study and the premium system will be discontinued.

Numerous statements made by officials of the Ordnance Department would imply that the employees of the Watertown Arsenal are perfectly satisfied with the system, and even a letter written by a Mr. Miner Chipman, an efficiency engineer, to Senator Weeks, under date of February 12, 1915, would have the authorities believe that he, as counsel for the arsenal employees, was authorized to state that they were opposed to the legislation contained in the Army bill on the subject of time study and premiums. In rebuttal of this, permit me to call your attention to numerous petitions that have been filed with the War Department by the employees at the Watertown Arsenal asking the discontinuance of the system, and the more recent letters written by their authorized committee at the arsenal in which the legislation in the Army bill was favored and urged for passage. One such letter can be found in the Congressional Record of February 23, 1915, on page 4882. Mr. Chipman had absolutely no authority to represent the employees in the direction he did. He did have authority to represent them for the purpose of securing the elimination of the system, time study and premium included; but he did not have authority to represent them for the purpose of urging the continuance of these features. Since the passage of this clause in the Army bill, Mr. Chipman has resigned as their counsel as he no longer represents their wishes.

Since Congress has already expressed its wishes on this subject, there appears to us to be no necessity for the department to wait until the Industrial Commission has made its report relative to this subject before it takes action. With all due respect to the Federal Commission on Industrial Relations, which is doing excellent work in many respects, Congress, we believe, is a more authoritive body and the departments should carry out its wishes.

For your information, I insert a copy of an order which has recently been promulgated by the Secretary of the Navy with reference to the clause in the Navy appropriation bill which prohibits time study and the premium or bonus systems in his department. This order we consider eminently fair and in keeping with the position that we think the departments should take:

"NAVY DEPARTMENT,
"*Washington, April 19, 1915.*

"From: Secretary of the Navy.
"To: Commandant and industrial managers of all navy yards and stations.
"Subject: Circular letter in regard to premium and bonus systems.

"Attention is called to the proviso in the naval appropriation act for the fiscal year ending June 30, 1916, reading as follows:

"'*Provided,* That no part of the appropriation made in this act shall be available for the salary or pay of any officer, manager, superintendent, foreman, or any other person having charge of the work of any employee of the United States Government while making or causing to be made with a stop-watch or any other time measuring device a time study of any job of any such employee between the starting and completion thereof, or of the movements of any such employee while engaged upon such work; nor shall any part of the appropriations made in this act be available to pay any premium or bonus or cash award to any employee in addition to his regular wages, except for the suggestions resulting in improvements or economy in the operation of any Government plant.'

"All premium and bonus systems of doing work and all time studies or timing of employees as defined in this act will be discontinued on or before June 30, 1915.

"The wording of this act, however, is constructed as not prohibiting straight piece-work, that is, work paid for at a certain rate, such as per hundred rivets, per hundred feet of calking, etc., etc., with or without a guaranteed day's wage in case of failure through no fault of the employee.

"Where systems are in use, based upon premiums or bonuses, these should be charged, if possible, to straight piece-work, as defined above, provided such charge is acceptable to the employee.

"JOSEPHUS DANIELS.

"[First indorsement.]

"APRIL *26, 1915.*

"From: Commandant, Washington,
"To: Departments concerned.

"1. Referred for compliance.

E. W. EBERLE."

The introduction of piece work, of course, is intended for departments outside of the machine shop. Machinists will not work piecework, as their work is not sufficiently uniform, and the Navy Department is not forcing it upon them.

We trust that the War Department will permit the machinists to continue the day work system after discontinuing the premium method of pay.

For your information, I am also appending hereto a clipping from the Vallejo Times, Vallejo, Cal., contained in their issue of April 23, 1915, which shows the effect upon the workmen of the premium system when drastically applied.

The last four conventions of the American Federation of Labor have gone on record favoring the discontinuance of the Taylor system in Government plants, and organized labor throughout the United States is practically unanimous in its desire to prevent these abnormal speeding systems from becoming general in use.

This question has been sufficiently discussed through our conventions, our labor press and other means of disseminating information, for labor in general to watch with the keenest interest the position which will finally be taken by the War Department.

Trusting that a favorable decision will be reached, and hoping to be advised of your conclusions at an early date, I remain,

Very respectfully, yours,

——— ———,
President District No. 44,
International Association of Machinists.

WAR DEPARTMENT,
Washington, June 24, 1915.

MY DEAR SIR: I herewith hand you for your information a copy of memorandum of the Judge Advocate General concerning the legislation with respect to the premium system.

I have read this memorandum over, and it seems to me that it is well considered and that the determination therein announced is proper.

If you desire to make any statement to me as to why I should not adopt the policy in question, you are free to do so, but it must be in my hands in writing by Monday of next week, as I shall want to act very promptly.

Sincerely, yours,

LINDLEY M. GARRISON,
Secretary of War.

Mr. N. P. ALIFAS,
President District No. 44, Government Employees' International Association of Machinists, Room 3, Naval Lodge Building, Fourth Street and Pennsylvania Avenue SE., Washington, D. C.

OFFICE OF THE JUDGE ADVOCATE GENERAL,
Washington, June 5, 1915.

Memorandum for the Secretary of War:

Subject: Use of fortification appropriation for continuing the premium system of employment at Watertown Arsenal: Protest of Mr. N. P. Alifas, president district No. 44, International Association of Machinists.

1. The views of this office are desired with reference to the provisions in the Army appropriation act of March 4, 1915 (38 Stat., 1083), forbidding the use of the appropriations made in that act for the payment of premiums or rewards based upon the quantity of work in the manufacturing establishments of the Ordnance Department, and the fact that a similar provision is contained in the naval appropriation act of March 3, 1915 (38 Stat., 953), *as to whether the terms of the prohibition should be applied* to manufacturing work at Watertown Arsenal, Mass., payable from appropriations carried under the fortification appropriation act (38 Stat., 888). In other words, the question is:

"In considering the particular provision in question in connection with the whole subject matter is there weight in the suggestion that we should ethically observe the spirit of the legislation and prohibit the interdicted things everywhere in the War Department?"

2. It is conceded that the provision in the Army appropriation act forbidding the application of the so-called "Taylor system" in the payment of premiums or rewards from appropriations contained in that act, being expressly limited to the expenditure of those appropriations, does not legally bind the Secretary of War with reference to appropriations carried by the fortification act. It is contended, however, that the legislation should be regarded as an expression of the policy of Congress that the "Taylor system" should not be applied to Government work, and that the Secretary of War should, in the exercise of his discretion, ethically observe the spirit of the provision with reference to work carried on under appropriations contained in the fortification act.

3. When the legslation was under consideration the Secretary of War, in his letter to the President of the Senate, dated January 30, 1915, pointed out that the subject matter was under invesigation by the Commission on Industrial Relations; that the matter was of such importance that it should be dealt with directly and only after careful investigation and consideration; and that legislation of this character should await the result of such investigation and determination. Following these representations the provision was stricken out in the passage of the bill through the Senate, but it was reinstated in conference. It further appears that the fortification bill was not reported to the House until February 20, 1915, and did not pass that body until February 23, 1915, 12 days after the Army bill with the prohibitive legislation stricken off had been reported to the Senate. As no attempt was made to include a similar prohibition in the fortification bill, it may be assumed that Congress only intended to provide for a limited application of the prohibition, in vew of the arguments presented for and aganst the "Taylor system." I do not think, therefore, that the legislation is to be regarded as an expression of the policy of Congress that the system should be prohibited in all Government work, and it must be assumed that it was understood in Congress that without similar legislation in the foritfication bill the department would be free to apply the system to appropriations contained in that bill. Moreover, in the absence of positive regulation by law the manner of carrying on the Government work is one which, under our form of Government, rests with the executive department; and when the law does not control the executive department there can be no obligation, either legally or ethically, to extend the limitations of special legislation to matters not within its terms. Having in view the circumstances attending the enactment of the provisions in question, and the terms of the same, I am of opinion that the question whether or not the "Taylor system" should be applied to manufacturing work carried on under the provisions of the fortification act is one which is within the discretion of the Secretary of War, and that in the exercise of this discretion he is in no way bound, either morally or legally, by the limitations provided for with reference to the appropriations in the Army appropriation act.

E. H. CROWDER,
Judge Advocate General.

JUNE 29, 1915.

Hon. LINDLEY M. GARRISON,
Secretary of War, Washington, D. C.

MY DEAR SIR: In response to your letter of the 24th instant, with inclosure of the memorandum from the Judge Advocate General relative to the scope of the legislation prohibiting time study and the premium system at Government arsenals, permit me to point out that the judge's memorandum does not treat of all the various phases presented in my communication of May 4, 1915, which have a bearing on the attitude that should be assumed by your department in deciding whether or not time study and the premium system should be allowed to be continued at the Watertown Arsenal.

I trust before deciding this important question you will find time to read my statement of May 4 in its entirety, although it is lengthy.

The points which have apparently not been considered by the Judge Advocate General in reaching his decision are in part the following:

1. That the discontinuance of time study and the premium system at all arsenals between the date of the passage of the Army bill by the House and its final passage by Congress was ostensibly intended to convey to the workmen and to Congress what would take place if the clause prohibiting these features were left in the Army bill.

2. That the letters from your office to Senators and the Military Affairs Committee of the Senate indicated that if they allowed the clause to remain in the bill, it would prevent time study and the premium payments for at least one year in your department.

3. That the debate in the Senate by both proponents and opponents indicated there was no doubt but that if the clause in the Army bill were retained it would end time study and premium payments in all the arsenals for at least one year.

4. That the Senate rejected the clause before the conference reinstated it by the narrow votes of 29 to 31 and 27 to 33.

In view of these manifestations from the department it was felt unnecessary to include the same clause in all other appropriation bills, since if the department really wanted to evade this instruction of Congress it could save sufficient money from the previous fortifications appropriation bill to meet the expense of premiums. The Army bill was the one bill applying to your department that was the most far reaching. That is why it was selected in preference to others.

The Chief of Ordnance has intimated that the purpose of the clause was misunderstood by the Senate, claiming that the impression was that some one stood over the workmen with a stop watch in his hand continuously. This could not have been so, because that very point was explained correctly on the Senate floor by Senator Weeks before the vote was taken.

The only theory, it seems to me, upon which it could be assumed Congress did not intend to prohibit the system at Watertown to be affected by its act, is that they wanted to give the appearance of favoring "labor" without in reality doing so. We have no such admission or intimation in this case from those who voted for our legislation.

The Watertown Arsenal situation was freely used in the debate, and both proponents and opponents appeared to regard the passage of the clause in the Army bill as having a direct bearing on the Watertown Arsenal system.

If desired I shall be glad to try to point out more specifically the particular passages in the seven hours' debate in the Senate on the subject which support the above contentions, but to do so without it being requested would only make this letter too long.

I hope it will be decided to discontinue the time study and premium system at Watertown Arsenal on and after July 1, 1915, without substituting piecework in the machine shop in its place.

Sincerely, yours,

——— ———,
President, District No. 44, International Association of Machinists.

Office of the Judge Advocate General,
Washington, July 3, 1915.

Memorandum for the Secretary of War:
Subject: Premium system—Watertown Arsenal.

1. The question is asked whether the accompanying statements by Mr. N. P. Alifas regarding the memorandum of this office of June 5, 1915, on this subject "make it desirable or proper to reform" the said memorandum of this office.

2. Mr. Alifas refers to certain points raised in his letter of May 4, 1915, as apparently not considered in the memorandum of this office. While the points referred to are not discussed at length in the memorandum of this office, they were nevertheless given consideration. These points, with the views of this office stated under each respectively, are as follows:

(*a*) That the action of the department in discontinuing the "premium system at all arsenals between the date of the passage of the Army bill by the House and its final passage by Congress, was ostensibly intended to convey to the workmen and to Congress what would take place if the clause prohibiting these features were left in the Army bill."

Answer. I do not think the action of the department should be construed as here stated. The subject was under consideration by Congress, and the department could not know the form that the legislation would take. As finally passed, however, it constituted simply a limitation on the expenditure of the appropriations carried in the Army act, and it can not be assumed that it was understood by Congress or by the department as having any further operation than that included in plain import of the words used.

(*b*) That the letters from the War Department to Congress "indicated that if they allowed the clause to remain in the bill it would prevent time study and the premium payments for at least one year," in the War Department.

Answer. I think the observations under point (*a*) apply to this point also. At the time of the communications to Congress the legislation was under consideration, and the department could not, of course, know the form which would be ultimately given to it; or whether or not similar legislation would be included in the fortification bill. As ultimately passed, it constituted simply a limitation on the appropriation carried by the Army bill; and it must be assumed that it was so understood in accordance with the plain import of the provision by Congress as well as by the department.

(*c*) "That the debate in the Senate by both proponents and opponents indicated there was no doubt but that if the clause in the Army bill were retained, it would end time study and premium payments in all the arsenals for at least one year."

Answer. I do not think this is a fair inference from the discussion of the provision in its passage through Congress. On the contrary, I think it must be inferred that the provision was understood, in accordance with its plain import, as stated above, as a limitation simply on the expenditure of the appropriations carried by the Army bill. In the report of the Chief of Ordnance, dated May 14, 1915, he refers to the fact that he discussed with the Member of the House who proposed the legislation under consideration "the point that without similar legislation on the fortifications bill, this department would be free to pay premiums out of funds appropriated in the latter bill."

If it had been intended to make the legislation apply to the fortifications bill, the proper way to give effect to such intention would have been to include a similar limitation in that bill. The failure to do so must, I think, be regarded as leaving the department full discretion with reference to the expenditure of the appropriations carried in the fortifications act.

3. The foregoing supplemental memorandum will be sufficient to show that the points referred to by Mr. Alifas were duly considered before the original memorandum was prepared; and I do not, therefore, deem it desirable to reform that memorandum.

F. H. Crowder,
Judge Advocate General.

In view of the circumstances I will not interfere with the course of action laid down by the Chief of Ordnance in the matter. If the Congress really intends to abolish the merit system in all Government works under the War Department it can, and will say so; until then we should reward merit as best we may.

L. M. G.

SEPTEMBER 4, 1915.

Hon. LINDLEY M. GARRISON,
Secretary of War, Washington, D. C.

MY DEAR MR. SECRETARY: Supplementing my interview with you on August 30 relative to the desirability and advisability of discontinuing the objectionable features of the Taylor system at the Watertown Arsenal and substituting the straight day-work plan of payment in the machine shop, at a proper rate of pay, permit me to give the following reasons why this should be done:

1. In previous communications on this subject I have endeavored to point out that the spirit of the legislation passed during last Congress relative to time study and the premium system would mean the discontinuing of the features of the Taylor system to which we have objected, if followed to its legitimate conclusion. I shall, however, not dwell upon that aspect of the question, but merely inclose herewith, for your information and reference, copies of my two previous communications to you on this subject, under dates of May 4, 1915, and June 29, 1915.

I fully agree with you that your department is not bound by the literal interpretation of this legislation to discontinue the premium system at the Watertown Arsenal, and it has never been contended that such was the case. However, the impression of our people had been for a long time previous to the passage of this legislation that if Congress once expressed its opinion of what should be done that the department would consider such an expression as binding.

The scope of the legislation is such that the department is still left with the discretion of abolishing the objectionable parts of the Taylor system at the Watertown Arsenal. Everyone realizes that it is an absolute impossibility to prescribe by means of legislation all of the details of administering the affairs of an industrial plant; and if officials of the Government charged with the enforcement of law are not in harmony with the wishes of Congress and do not intend to carry out such wishes, except in so far as compelled to, there is no way by which Congress can possibly enforce its policies concerning affairs presumably under its jurisdiction. After all, the wording of any piece of legislation is merely a method of transmitting the wishes of the legislative body to people in the community to whom the legislation is applied, with the expectation that the results will be the same as though those who are affected by the legislation had the same desire as did the legislators when they passed the law. The instances in which this desire has not been carried out are numerous, due to the inability of legislators to properly circumscribe their thoughts by means of language. Cases in point are regulations regarding the sale of liquor and laws restricting the employment of child labor.

There may be some excuse for private individuals to evade the law when some one else, namely, the courts, interpret such law; but in the case of a department of the United States Government who to a large extent interprets laws applied to itself, I submit that the interpretation should be more liberal.

The ability of the people to secure the passage of laws and the reasonable enforcement of the same is about the only bulwark that stands between peace, harmony, and respect for law on the one hand, and war, revolution, and anarchy on the other.

2. The Taylor system is a scheme of ultraindustrial efficiency, built up with a certain object in view. This object was clearly made known by its author, Mr. Frederick W. Taylor, in his work entitled "Shop management," at a time when it was not necessary for him to carry favor with the public or to gloss over or moderate his language to make it acceptable to the public or to working people; but it was given to a body of manufacturers in a way which presumably Mr. Taylor thought would appeal to them. The circumstances under which this treatise was written, therefore, makes it unusually valuable as a means of learning the true purpose and real intent of the Taylor system.

Our principal objections to the Taylor system are as follows:

(*a*) The elemental time study, which has for its object the ascertaining of the maximum amount of work a good workman is able to do.

(*b*) The paying of premiums, as one of the numerous incentives for spurring the workmen on to extraordinary exertions.

(*c*) The strict system of discipline necessary to enforce a complicated workshop scheme which is so intricate that everybody must be compelled to strictly "toe the mark," in order that everything may go like clockwork.

(*d*) The substituting of a low grade of workmen for the skilled workmen employed under other systems of shop management with the accompanying condition of paying lower wages. The Taylor system partially makes up for the lowering of the wage scale incidental to the hiring of a cheaper grade of workmen by the premium he receives.

(*e*) The disagreeableness imposed upon each workman of having eight different bosses to goad him along, instead of one boss as ordinarily is the case.

(*f*) The gradual weeding out of less skilled workmen who can not keep up to the extraordinary high pace set. If this policy were carried out by all private employers, a man who was not a first-class workman would have no place on earth; and he would either have to fight for a right to work or be "Oslerized" to put him out of his misery.

(*g*) The dissatisfaction caused among the workmen due to the impossibility of making a reliable time study of work in the machine shop, because of the impossibility of maintaining standard conditions. Materials vary in hardness; tools vary in their temper, accuracy, and general fitness; and different machines vary greatly in their efficiency and adaptability. The results attained by one workman are also determined to a large extent by the efficiency and promptness with which he is assisted and cooperated with by other workmen. All of this produces in the minds of the workmen a chronic state of dissatisfaction, since the time study and the extent of his earnings through the premium system are largely based upon perfect conditions.

The entire treatise on "shop management" by Mr. Taylor bristles with expressions of the desirability of speeding up workmen, discharging all but first-class men, drastic discipline, paying as little as the law of supply and demand compels, and giving workmen object lessons of what happens if they do not comply with orders; in other words, making the workshop a veritable inferno.

I do not contend that these results and conditions apparently desired by industrial managers have been as yet attained at the Watertown Arsenal. However, the machinery is all there for putting them into effect at an opportune time.

Our objections to time study are not based upon the use of the stop watch as such but upon the purpose for which time study is intended and the ultimate goal to be attained. By way of illustration, our objections to time study might be likened to the attitude your department might assume if it was learned that the Imperial Japanese Government intended to send a fleet of war vessels to the Hawaiian Islands for the purpose of establishing a base of supplies and operations. Even though the United States were assured that any strategical advantage thus gained would not be used against it, an effort would be made to stop any foreign fleet from landing there, especially, if you had learned that the real purpose of securing a base of operations was to invade the United States. The sending of a fleet of war vessels from Japan to the Hawaiian Island would be a perfectly peaceful operation provided what they intended to do after they got there was peaceful; likewise the making of a time study would not be objected to if the results of it were not intended for an objectionable purpose.

In order that you may see from actual quotations from "Shop management" by Mr. Taylor that the above conclusions are correct as regards the purposes of this system, I append hereto a number of extracts taken from that treatise.

Our reason for selecting the time study and the premium system as special objects of attack is that these are the features upon which all the rest of the harrowing details of the Taylor system are based. Our objection to the Taylor system will not cease with the elimination of the time study and the premium system if other means are devised for securing the same results. What we desire to prevent is this intensive scheme of production with its extraordinary stimulus to the activities of the workmen.

3. During my conversation with you on August 30 you made the very reasonable observation that it is possible to outline a theoretically perfect scheme for settling almost any troublesome situation, such as the difficulties in Mexico, provided the element of human nature is not taken into consideration and certain premises are assumed.

The Taylor-system scheme might look very beautiful to the manufacturer or industrial manager whose only desire is increased productivity and greater profits; but in our opinion this scheme will not work because it has not taken into consideration the element of human nature. Mr. Taylor in devising his scheme did not take into consideration whether or not the American workman would in the long run submit to that sort of treatment; and if the American workman will not do that his scheme will not work any more than the finest scheme yet devised for settling the troubles in Mexico. As an evidence of the attitude of the American workmen, I desire to merely call your attention to the following:

(*a*) That at the last four conventions of the American Federation of Labor the Taylor system has been denounced as vicious and unfit to be imposed upon the American workmen and something to be fought to extermination.

(*b*) That practically every labor organization in the United States has expressed its unalterable opposition to it.

(*c*) That the employees in the Government service have maintained an attitude of uninterrupted opposition to this scheme ever since its inauguration. Numerous petitions and complaints have been received from the employees at the Watertown Arsenal, the object of which has been to secure the abolition of the Taylor system.

I merely call your attention to these matters to show that the element of human nature has not been taken into considerartion by Mr. Taylor in devising his scheme, and unless it is possible to secure the cooperation of the workmen to some extent this scheme can not work ultimately. I know that you are too sensible and wise in the ways of the world to attempt the impossible and to allow a course to be pursued in your department that is meeting more opposition every day.

4. The system in operation in the arsenals previous to the inauguration of the Taylor system made ample provision for rewarding workmen paid by the day in accordance with their efficiency. At the Rock Island Arsenal, for instance, the workmen are rated as to efficiency semiannually, and adjustments in wages are made in accordance with these findings. For the machinists a wage scale exists ranging from $2.75 to $4 per day, in five grades. The latitude for toolmakers is from $3.50 to $4.50, in four grades. This, together with the power of discharge and the process of selection which has been going on through the civil service and otherwise to secure a high grade of workmen, we believe is ample to secure from the workmen a reasonable day's work. If more than a reasonable day's work is expected, and a scheme is inaugurated to secure that result, naturally we are opposed to it.

It has been contended that the Government of necessity would always be a good employer, and that oppressive laboring conditions will never be attempted because officials of the Ordnance Department have not sufficient incentive to induce them to introduce onerous and oppressive workshop conditions. Permit me to point out that within the last few months the Frankford Arsenal machinists receiving $3.24 on all of a given grade of work have been displaced by men receiving $2.24 per day. At least one of these men who was receiving $3.24 was given the option of being discharged or accepting the same work at $2.24 per day. At the Rock Island Arsenal laborers have been known to have been reduced from $1.75 to $1.60 per day. To a workingman this sort of process looks like oppression, and the very thing we are fighting against. The Ordnance Department is no respecter of persons. What they would do to a laborer in offering him $1.60 per day they would also do to a mechanic getting $4 per day if it were possible. Such evidences as the above of what would happen if it were enforceable leads the workmen to believe that it is necessary to prevent the inauguration of such schemes as the Taylor system, which readily lends itself to such activities.

Permit me to also point out that in the hearings before the special committee of the House of Representatives investigating the Taylor system the Chief of Ordnance was unable to see anything drastic or objectionable about this scheme as outlined in Mr. Taylor's "Shop management." He also stated, on page 1167 of the hearings, as follows: "Anything that produces permanent dissatisfaction and discontent would be given up. We desire to have our relations with the workmen harmonious." Inasmuch as the four years of opposition to the Taylor system by the workmen at the Watertown Arsenal, which opposition has included not only threatened strikes but actual strikes—and at the present time the situation is in its most critical stage—does not, in the opinion of the Chief of Ordnance, require the elimination of this system, then the conception that the Chief of Ordnance has of what constitutes satisfaction and harmony differs materially from ours.

5. Much of the economy that has been effected at the Watertown Arsenal and attributed to the Taylor system has been due to the increase in the equipment of tools and facilities for expediting the work, the introduction of high-speed steel, the use of materials that had previously been charged to other work and

that since the introduction of the Taylor system have been collected and used without being charged to the work, the scheme for issuing materials and accounting for the same, the routing-of-work system, and the better arrangement of the machinery. All of these things have produced efficiency and economy and are not a necessary part of any system the objectionable part of which is the abnormal speeding up of workmen.

6. While individual increases have been given at the Watertown Arsenal since the inauguration of the Taylor system, the scale of wages has not been increased; that is, it runs no higher than $3.52 per day, which has been the maximum for years. At the present time the wage scale in private establishments in the vicinity of the Watertown Arsenal is much higher than this, and a material increase should be given the machinists at this time. In fact, we believe that the scale at the present time is so much below what it should be that the present maximum should be made the minimum, and the proposed maximum should be as high as $4.48. Ostensibly the premium system pays the men more wages than they otherwise would get, but it usually has the effect of holding down the rate per day, probably due to the expectation on the part of the employer that the premium a workman makes, added to his daily wage, will satisfy him.

The employees have waited a long time, Mr. Secretary, for the abolition of the Taylor system, and we have endeavored to employ peaceful means throughout. Almost everyone who has participated in the matter has agreed with us, excepting the Ordnance Office itself, and we hope that after you have given this matter your personal and serious consideration you will also agree with us. We do not think it a disgrace for a public official to come to the conclusion that a mistaken policy has been pursued by his subordinates who are intrusted with certain important functions, and I feel that if you will discontinue the Taylor system it will not only be a matter of gratification to you in years to come and an action for which the great body of people in this country will honor and revere your name, but it will make the employees in the Government service feel that at least one official of the War Department is interested in their personal welfare and willing to give them a square deal. This in turn will induce them to go at their work with a good will and result in a degree of productivity that is in accord with what should reasonably be expected of them.

Hoping that you will soon be able to arrive at a favorable decision, and trusting to be advised of your conclusion in this very important matter, I beg to remain,

Very sincerely, yours,

——— ———,

President District No. 44, International Association of Machinists.

WAR DEPARTMENT,
Washington, January 3, 1916.

Mr. N. P. ALIFAS,
Naval Lodge Hall, Washington, D. C.

MY DEAR SIR: I have been able to find sufficient time to go through the mass of material concerning the matter of scientific management at Watertown Arsenal to reach a conclusion upon the specific matter before me, but I have not had nearly enough time to study the subject so as to reach conclusions with respect to any broader aspects thereof.

The specific question which you have put to me, as I understand it, is whether I shall discontinue the methods of scientific management in vogue at Watertown Arsenal. I have reached the conclusion that it would not be wise for me at this time to do so.

If the Congress of the United States regulates this matter by law, then there is nothing open for discussion, and the law will be absolutely abided by in letter and spirit. I do not agree with your suggestion that because legislation already prohibits certain things with respect to one appropriation a similar prohibition should have been annexed by the department itself to other appropriations. I think Congress will express its intention in the proper way and that until it has done so the department should proceed along what it conceives to be wise lines.

With respect to this matter of scientific management, it is conceded by all those who have studied it that the theory is unobjectionable, that its practical operation requires experience to work out the best results for labor and society. It is very well expressed in one of the reports of the Commission on Industrial Relations:

"In so far, then, as scientific management offers opportunity for lower costs and increased production without adding to the burden of the workers in exhaustive effort, long hours, or inferior working conditions, it creates the possibility of very real and substantial benefits to labor and to society."

There is no evidence before me that the scientific management in effect at Watertown Arsenal adds "to the burden of the workers in exhaustive effort, long hours, or inferior working conditions." I do not, therefore, feel that I should determine this question by ordering the abolishment of the scientific management now in vogue there. As I said to you in conversation, I feel that the proper way to treat the matter is to have it carefully investigated with a view of seeing that justice and fairness prevail and that a proper system, fair to the Government and to the workers, is devised and operated. I will do everything proper and possible to this end. I do not think I should foreclose the matter in the way suggested by ordering the abolishment of the present system, which, so far as I know, has not been shown to have any of the detrimental effects above referred to.

Sincerely yours,

LINDLEY M. GARRISON,
Secretary of War.

Mr. VAN DYKE. There is much difference of opinion, however, as to whether or not classified civil service employees have the right to strike against the Government, is there not?

Mr. ALIFAS. In the Postal Service it is prohibited; but in the arsenals and navy yards there is no direct prohibition of law to prevent a strike. The law provides that no one is allowed to request an employee to break his contract with the Government. It is a question whether or not a man working by the day, and subject to discharge at any moment, is under a contract to work for the Government. He is under no contract to work any longer than he chooses to work, so you are not really asking him to break a binding contract.

Mr. VAN DYKE. I wanted to bring that out to show where the difference was between the employee paid by the day and a man under contract with the Government. There is a difference, you know, in their attitude toward the Government, and the Government differentiates between the postal employee and the man who works by the day in the shops.

Mr. ALIFAS. Yes; the prohibition in different divisions of the service was based on different theories. The prohibition for the postal employees is based on obstructing the mails; and the prohibition in Government arsenals is based on the supposition, as I recollect it, that the Government is likely to be in trouble at any time; and in the event of pending trouble it is illegal to ask an employee to break his contract with the Government, although employers of labor have been doing that for the last year and a half. These munition manufacturers have gone to the arsenals and have taken away scores of men. They secured, I am informed, about 150 machinists at the Frankford Arsenal last fall, and offered them higher pay. Of course, that has not been objected to by the War Department officials. In fact, the War Department officials have not objected to Army officers leaving the service for the purpose of getting lucrative positions from munition manufacturers.

Mr. VAN DYKE. Of course, there is a different position existing in the Postal Service entirely. I do not believe they would have the right to strike.

Mr. ALIFAS. No; postal employees have not a legal right to strike.

Mr. NOLAN. Without any prohibition, or even before they were classified in the civil service, have not strikes in the Government plants been very rare?

Mr. ALIFAS. Yes; they have been very rare. I know of but two in recent years. One was at Watertown, the one you speak of, among the molders; and the other was at Rock Island, Ill., about 10 years ago. We have had a number of small disturbances that were akin to strikes, but there were no actual legalized strikes; that is, no strikes that had received the sanction of the grand lodge of the labor associations. There were spasmodic and independent.

Mr. NOLAN. Well, in the strike at the Rock Island Arsenal of the molders, did they not immediately return to work, on the assurance being given that their grievances would be taken up?

Mr. ALIFAS. At the Watertown Arsenal, you mean?

Mr. NOLAN. Yes.

Mr. ALIFAS. Yes.

Mr. KEATING. Before you get away from that, Mr. Alifas, do you know the total number of men in the Watertown Arsenal affected by the Taylor system?

Mr. ALIFAS. There are about 600 men employed there, and they are all subject to it, more or less. They are not working at it continuously, but they are practically all under the system, and are likely to work at it at any time.

Mr. KEATING. What proportion of those men do you represent?

Mr. ALIFAS. I represent about one-third of them. I represent all of the machinists there.

Mr. KEATING. Are the other 400 under organized labor?

Mr. ALIFAS. The great bulk of them; yes, sir.

Mr. KEATING. Have they protested?

Mr. ALIFAS. Yes, sir; they have all protested.

Mr. KEATING. So that the majority of the 600 men affected have protested against the system?

Mr. ALIFAS. Yes, sir; and even the attempt of the Chief of Ordnance last year to induce them to protest against the stoppage of the premium system did not have that effect. They did not protest against it; they were in favor of the proposed legislation.

Mr. NOLAN. Did Gen. Crozier, Chief of the Ordnance Department, put into effect a similar order in Watertown to the one he put in——

Mr. ALIFAS. In fact, he put the order into effect at Watertown before he had the order placed at Frankford. The order was placed on the bulletin boards at the Watertown Arsenal on January 25, 1915. That was three days after the bill passed the House; and on January 27 it was placed on the bulletin boards at the Frankford Arsenal. Now, this legislation the department afterwards claimed did not apply to Watertown, but apparently at that time the Chief of Ordnance believed it applied to Watertown, because he put it into effect there first. In fact, he made the order effective in the place where he afterwards claimed it did not apply, before he placed it in effect where he afterwards acknowledged it did apply.

Mr. KEATING. Do you know of any attempt being made to circulate a petition in the Watertown Arsenal?

Mr. ALIFAS. At this time?

Mr. KEATING. No; at the time the order was placed.

Mr. ALIFAS. At the Watertown Arsenal?

Mr. KEATING. Yes.

Mr. ALIFAS. No, sir; there was no attempt made, as I recollect now, by the management at the Watertown Arsenal to get out any petition, but that apparently was done at Frankford. My information is that the petition was drafted by the commanding officer of the Frankford Arsenal and circulated in the shops by some of the foremen, mostly among nonunion employees, who did not understand the question that was before Congress; and who were also under a misapprehension as to what the effects were going to be, as was brought out here the other day by Mr. Keating in cross-examination.

With regard to the effects of these systems of shop management, for illustration, I would like to read a few extracts from the published testimony of and investigation held in England. In 1909 there was an investigation made of the premium and bonus system by the Trades Union Congress of Great Britain, and this volume contains extracts from testimony by workmen who had worked under it against the system. I would like to read to you two extracts. One is on pages 18 and 19, and the other is on pages 34 and 35:

> Another member of the A. S. E. gave further evidence. He was a marker-off in the erection of gun mountings and had worked five years on P. B., previous to which he had done the same work on time rates. He preferred the latter, and considered it impossible to fix an accurate time basis for erecting work, because of the inevitable variations in machine-work finish. The time fixed was based on the estimated number of hours a man would take to do a particular job, but these estimates were often wide of the mark. For example, in trimming seatings for training motors 1,500 hours was allowed. A slight alteration took place which reduced the fitted surface by 2 inches superficial and the time allowance was cut down to 800 hours. This was not an extreme case, and the witness instanced another case in which a job had been cut from 1,325 to 800 hours. The time of apprentices who worked with journeymen was always calculated separately, and lads were supposed to do work in six-tenths of the time allowed a journeyman and, as a rule, they received double their weekly rate of pay. The employment of a lad was no advantage to a journeyman, except in his last year, and then only when the apprentice was kept to the work he had been accustomed to, and the way in which both man and lad were speeded up prevented the former teaching and the latter acquiring an all-round knowledge of his trade. No automatic jobs had been introduced to his department, consequently there had been no justification for the continual cutting of prices to which they were being continually subjected. This constant alteration, invariably in the same direction, had resulted in constant bickering between workmen and the rate fixers. He had known frequent cases in which an alteration of the drawing number had been held to justify a reduction in the time allowance. The difference in his wages was some 4 or 5 shillings per week and he had a higher rate than the ordinary fitter. He would willingly sacrifice that sum if he could return to day work; he would be free from the harrassing which continually went on and more men would be employed. He certainly was of opinion that apprentices were not so well trained under the P. B. system as under time conditions.
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> Another member of the A. S. E. stated he had worked at Messrs. Vickers' for two and a half years on time and nine years on premium bonus. He was a fitter on the detail bench. He much preferred time work. His opinion of the P. B. system was that it was detrimental to the workers, as it brought one man into individual competition with his fellows. The class of work was certainly deteriorating, as it was impossible to turn out so good a job under this as under the time system. They had to rush from morning until night, and this did not conduce to good workmanship. He received on the average 7 shillings per week more than on time rates. He did not think it possible to fix accurate time allowances for fitters, as there was great diversity in the condition in which work left the machines for which no provision whatever was made. They could appeal to the chief rate fixer, but no notice was ever taken of their protests. With regard to the effect of this system on unemployment he was of opinion that the number of hands had been reduced by at least 50 per cent as a direct result of the introduction of this system. A good deal depended on the foreman, who could use his influence with the rate fixer to obtain an extension of the time allowances, and this was frequently done. He had

known cases of jobs being cut down by one-third, the only justification for this reduction being the issue of a different drawing and a different order number. There were also cases in which foremen had asked men to hurry a job out for some special reason without a time card and the time would be the same as previously allowed. The time fixer had then appeared with a time allowance much less than the workman had been led to expect. With regard to casual labor the witness had seen men sent home at 10 minutes past 6 in the morning and at 20 minutes to 5 at night; when a job was completed and there was not another immediately ready the man was sent home. In his department the system was fairly popular, as it was well organized and they had a sympathetic foreman. His views were against the continuance of this system, not on personal grounds, because he was doing fairly well under it, but because of the effect he knew it had on the general body of workmen.

Another member of the same society, a brass turner, had been employed at Elswick for 12 years prior to January, 1904. He had been under the feed-and-speed system, against which he had little complaint to make. One feed-and-speed overseer had five or six shops to overlook, and in many cases his supervision was only nominal. In 1904, however, the P. B. system was introduced, and they were subjected to close and continual supervision. He was on small work and had as many as 15 and 16 separate jobs in one day, each one having its own time allowance attached. When the system was introduced the time allowances were fixed by the feed-and-speed men, who reckoned what time the job could be done in and added one-third. The basis had, however, been changed, and now if 15 hours was given as a basis allowance and they did it in 12 hours they received time and quarter. In order to cut prices they would take the same job to another shop and give a basis time allowance of 12 hours, and to earn time and quarter the workmen would have to do it in 9 hours. This system had been so developed that shops were competing one against the other as if they represented rival firms, the foremen of each shop having to put estimates in for most of the work now done by the firm. Under the old system of day work six men would be employed on alternate night and day shifts; under the P. B. system the same amount of work was done by three men on day work, so that three men on this particular job had been displaced. The feed-and-speed overseers were still there under the name of machine inspectors, and it was still their duty to see that the machines were driven at their highest possible speed. There were no apprentices to his trade, and under the present system there was every probability of brass turners losing their identity, as they worked in the same shops as the general body of machine men. In his opinion, 99 per cent of the men working P. B. objected to it and would abolish it to-morrow if they could. His rate was 35 shillings per week and his average bonus amounted to 1 shilling 2½ pence per week. There was no redress for any complaints, either through the society or through the individual. Unskilled men were being continually started at the simpler form of machine, and with their first jobs they received tickets giving the time allowance for their work, and if they could not do it in the time they were at once discharged.

A member of the steam-engine makers had been enployed at Elswick for 18 years; he had also worked at a local locomotive works. He had considerable experience of piecework, with which he had no fault to find, but his opinion of P. B. was entirely different. It was a common occurrence for an estimator to stand over a man, watch in hand, which was intolerable to any self-respecting man. He held that this system was detrimental to the interests of trade unionism, and the practical result of its working was that if two men received 6 or 7 shillings per week overwage and earned considerably more they displaced one man and deprived him of his means of livelihood. Under the present system the firm got one-third and he got two-thirds of the saving effected on the basis time. Where the time allowance for a big job was obviously too little the mistake was attributed to the office staff. There was really little or no system of computing time allowance and these errors were of frequent occurrence. The effect of the P. B. system was to intensify unemployment; previous to its introduction 180 men were employed in the shop, which number had been reduced to 120, the output being the same. Men never knew exactly what they were going to get at week ends. There were no printed rules and no way in which they could ventilate grievances. Apprentices were not properly trained now and were no use in other shops or at any class of work other than those in which they had been specially trained. When they had completed their apprenticeship they generally drifted into other occupations.

These extracts show that the men there were opposed to the premium system, largely because of its speeding-up tendency and unjust wage conditions.

Mr. KEATING. How long has it been in force in Great Britain?

Mr. ALIFAS. It appears to have been just started about that time. It had been in operation, I understand, about two years or so at that time, and the mechanics there were fighting against it.

Mr. VAN DYKE. When was that?

Mr. ALIFAS. In 1909.

Last year an employee by the name of D. C. Manning, at the Mare Island Navy Yard, working in the sailmakers' loft, had a very serious nervous breakdown, as a result of which he appealed to the Department of Labor for compensation under the compensation act, and the Department of Labor sustained his plea. I will read what he has to say regarding his own case, and what the official from the Department of Labor has to say about it. Mr. Manning says:

> Under the time-card system you had to give an account of every minute you were on a job, and we were given to understand that the men who did the most work would hold their jobs the longest. Later the Halsey system was introduced. Under this plan, a time man, equipped with tablet, lead pencil, and stop watch, sat in front of the worker to find out how long it takes to do a certain piece of work. The report to headquarters was your future standard for that class of work.
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> The Halsey system is designed to get out of the man employed under it the greatest possible amount of work he can do in a given time, with the fear ever hanging over his head that a failure to keep up to the standard will cause him to lose his job.

Mr. Manning was engaged in making coaling bags, which are 42 inches long and 8 feet in circumference. It is the hardest work in sail making.

Down further in this article from which I am reading the solicitor of the Labor Department has the following to say:

> Here was a strong, hearty, hard-working employee who, for about 20 years, had been regularly employed by the Government, and whose rating was first class. After putting in all those years of service and retaining his health, strength, and vigor, a new system was installed in the Government establishment by which the employee was kept under the highest nerve-racking tension by reason of the fact that a man sat watching his every movement during every minute of an eight-hour day. In addition to this it will be observed from claimant's letter, above quoted, that the work he was performing was one of the heaviest and hardest kind to be performed in his occupation. Under such circumstances it is not a matter of surprise that his health should be injured and shattered, for it certainly seems that such treatment of a man engaged in heavy manual labor, necessitating also the use of the intellect, would be sufficient to upset the mind of an ordinary individual and produce insanity.

Mr. KEATING. Who rendered that decision?

Mr. ALIFAS. The solicitor of the Labor Department who has the deciding of cases that come under the compensation act for injuries to Government employees.

Mr. KEATING. Did the man receive compensation?

Mr. ALIFAS. The man received compensation; yes, sir. It was acknowledged that he had been working too hard under this system. They have had a system akin to the Taylor system at the Mare Island Navy Yard. As soon as this law was passed last year prohibiting time study and the premium system, or as soon as it became effective, on July 1, of last year, the Secretary of the Navy issued an order prohibiting the features that were to be prohibited, and has lived up to the law absolutely.

Mr. KEATING. Just on that point, in your correspondence with the Secretary of War, did he manifest any disposition to comply with the evident intent of Congress?

Mr. ALIFAS. Only to the extent that he was compelled to in accordance with interpretations supplied him by the Judge Advocate General of his department; and the Judge Advocate General concluded that he was under no obligation to carry this any further than the absolute letter of the law indicated; and that limited the operation of the law to funds supplied by the Army bill.

Mr. KEATING. The Secretary of the Navy, on the other hand, promptly, and apparently cheerfully, complied with the instructions?

Mr. ALIFAS. Yes, sir; he did it cheerfully, without any attempt at evasion. He did not even elicit an opinion from the solicitor as to how far he could go. He went as far as he could to comply with the spirit of the law. In fact, in introducing piecework he stipulated that piecework should not be introduced except by the consent of the employees. In the War Department, on th other hand, they changed from bonus work to piecework, without consulting the wishes of employees. Some of the employees, possibly, wanted it, because they did not know the nature of piecework. They were unorganized people, and did not understand what it led to, but, I presume, it would have been introduced, regardless of whether they wanted it or not. I will state, however, that the War Department does not permit its own employees to evade its rulings in the same fashion as it evades the evident wishes of Congress.

At the Rock Island Arsenal an employee who had been elected by our membership to serve on a wage committee, tried to get a statement from one of the employees in the office as to the names of the men and the rates of pay they received in different departments of the arsenal. We could have secured that information without getting it from the office, but it was convenient. This office employee reported the matter to the management, and the employee requesting the information was discharged. We did not get him reinstated until after three months, when he had lost about $300 in wages. He was a man with a large family, and the loss of $300 was about the amount that he would be able to save in three or four years. The average mechanic, working in the shop, can not save over $100 a year, even if he is economical, and for that little mistake this workman suffered the loss of savings that it would take him three or four or five years to accumulate. This discipline was based on a ruling which says that employees shall not give out information in the possession of the Government without, in each instance, an order from the Chief of Ordnance. That manifestly applies to information of a secret nature, since in each case it would require an order from the Chief of Ordnance. Even the commanding officer, under that rules, would not be allowed to give out information without in each case an order from the Chief of Ordnance. This man was disciplined under that rule, although he did not directly violate it. He did not give out the information; he did not even get it, but merely had asked for it. He did not get it, but they contended that he had tried to get someone to violate that rule and it was not his fault that the rule was not violated, so he was disciplined. Now, if a liberal interpretation of that order had been followed he would not have been disciplined, but the War Department does not give its employees the same latitude in interpreting regulations as they assume themselves in interpreting the regulations that are made by Congress.

It has been admitted by witnesses here before this committee that the survival of the fittest is the doctrine embodied in the Taylor system. Of course, that applies to the setting of wages also. They have explained to you that there are various systems of setting the increment that an employee gets for efficiency, and that varies all the way from 15 to 50 per cent, or 100 per cent. Now, they have not stated how they arrive at that percentage. It is arrived at in this way, according to Mr. Taylor's work. He has a paragraph in his work on shop management devoted to that subject, paragraph 32, in which he describes the method by which he arrives at the premium the man should get above his day rate for certain classes of work. He experiments much after the fashion that a mathematician will determine the square root. You get first an approximation which will be a little bit above what the square root should be, and then you get an approximation which will be a little bit below what the square root should be, and if you keep on getting approximations, you get closer and closer to the true figure for the square root. The employer, for instance, arbitrarily sets 30 per cent. If he can get all the men he wants at 30 per cent, he discovers that he does not have to pay 30 per cent, so he puts it down, say, to 15 per cent. Then he discovers that by giving only 15 per cent he is not getting men enough, so he raises it up to 25 per cent. Then he discovers that that is too much, so he puts it down to 20 per cent, and gradually, by that approximation method, he gets exactly the number of men he wants who will work at this particular speed. It is operated according to the law of supply and demand. They pay the regular day rate, and then on top of that rate they give the employee this added percentage. If the day rate is not established scientifically, it is established in accordance with whatever the day rate is in a community. Now, suppose scientific management became general, and they began to eliminate about one-third of the men in all of these shops, there would be a surplus of labor. Of course, this surplus of labor would be looking for work, and in their endeavor to secure employment would be competing for the positions that they had been eliminated from. That would drive down the daily rate. As a consequence of that the wage in the vicinity, as soon as the premium system became general, would correspond to the law of supply and demand, and the day rate and the premium and all would not amount to any more than the law of supply and demand would compel them to give. So, evidently, even under the premium system they would not be getting any more than they would under a straight day-work system in the long run, as long as the law of supply and demand is going to operate.

Now, we are endeavoring to get away from the law of supply and demand to a certain extent, and the law of the survival of the fittest. If we were to revert to the law of the survival of the fittest, we would all be carrying swords, and the best man would take whatever he wanted. It does not change the theory very much to transfer the law of the survival of the fittest from personal, physical encounters, to industrial encounters. It is just as hard on humanity, and civilization exists for the purpose of making life less of a hardship and less severe for people. We do not think that any system ought to be inaugurated that has for its main purposes the carrying out or the intensifying of the law of supply and demand, or of survival of the fittest.

Mr. NOLAN. Let me ask you right there, Mr. Alifas, what effect has this system on collective bargaining?

Mr. ALIFAS. It has, in my judgment, this effect, that in so far as we have scientific management, collective bargaining will not exist. Collective bargaining is largely based on the trades-union movement. If you eliminate the trades-union movement there would be very little collective bargaining. The trades-union movement has, as some of its principal means of solidarity, the fact that they are classified in trades, that they have the same interests, that they have experience which enables them to have an advantage when it comes to replacing them. If a person has no experience he would not inconvenience his employer very much by quitting; but if he has experience and is doing work that requires an experienced man to do, it is difficult for his employer to find a man to take his place.

Now, scientific management aims to do away with the skill in the shop, and to transfer it to the planning department. Once the skill has all been accumulated in the planning and estimating department, and they dole it out to unskillful employees, the advantage that an employee has by being skillful is gone, and he is not able to stand up for his rights so readily. Scientific management is, by reason of its time-study feature, able to assign a task on very short notice, and they can possibly also break up a trade and specialize it in a very short time if they get into trouble with their workmen. Then, again, by the time the employees have been able to organize along a certain line the first thing they know the management comes along and changes their classification and calls them something else and turns them into something else, and they have got to reorganize over again, which breaks up their organization in such a way that they would not be able to get concerted or united action. In that way it prevents them from organizing to their own advantage. It places industry in flux, you might say.

Mr. NOLAN. In other words, it takes away the opportunity of collective bargaining, and renders the individual subject to the absolute mercy of the employer?

Mr. ALIFAS. Yes; and another aspect of it is that it is going to eliminate all of the recognized trades, as we know them to-day. What incentive would there be for a young man now to learn a trade, if he thought that scientific management was going to come into vogue? In five years from now the trades that exist at the present time would not exist any longer, and he would be learning something that would be absolutely useless in five years. If he started five years from the present time industry would still be in flux and they would be changing it, subdividing it, and reclassifying it, so that in two or three years from then there would not be any trades that existed at that time. There would be no incentive for employees to try to learn any definite kind of industry under a system of that kind.

I think that it is the duty of Congress to protect the people against abuses, and I think one of the prime objects of civilization is to make human beings happy, and if somebody is trying to introduce a system of management that is likely to deteriorate our race to such an extent that they will not become useful citizens it ought to be stopped. We have to protect our people. We protect them against the use of opium; we protect them against accidents; we protect them against the schemings of people who sit up nights to study plans to get the best of their fellowmen; and I hope the committee will allow this bill to be placed on the calendar, and to urge its passage.

I thank you very much for your attention.

Mr. SMITH. May I ask just a question or two. You heard the letters read and the remarks made about the employees of certain factories being very much in favor of this Taylor system?

Mr. ALIFAS. Yes, sir.

Mr. SMITH. What have you to say about those letters?

Mr. ALIFAS. Do you mean the letters from the clothing factories?

Mr. SMITH. Yes; those that were read, the remarks that were made, stating that the workmen were in favor of this kind of a system.

Mr. KEATING. Before the witness answers that question, did you hear Mr. Alifas's statement concerning the attitude of the Government employees?

Mr. SMITH. I heard it at the last session, I think.

Mr. KEATING. He made a statement just a few moments ago, representing the attitude of the Government employees, which, of course, would have a direct bearing on the bill before us. Now, if you will, answer Mr. Smith's question.

Mr. SMITH. I just wanted to find out if there were any workmen in any of the factories that were in favor of this.

Mr. ALIFAS. As a rule, Mr. Smith, when an employer sends out a notice to his employees to the effect that he would like to have them submit a statement to him indicating that they like to work for him he is very likely to get a favorable reply from the majority of them. He may think himself that he is not using undue pressure on them, but they do not know what his state of mind is. They may assume that he is going to force them to supply this statement. I know that during the pendency of the eight-hour law before Congress in 1912 that E. W. Bliss & Co., of New York, brought down a petition signed by a large proportion of their employees petitioning Congress not to pass the eight-hour law, and it can be proven that in almost every piece of legislation interfering with the wishes of certain employers that their employees have petitioned Congress requesting that such legislation be not passed.

Mr. SMITH. You would say, then, that the workmen generally are opposed to the Taylor system and the time study and the scientific management?

Mr. ALIFAS. I will say that the workmen who are connected with the American Federation of Labor and the trades-union movement are opposed to it, and those who are in favor of it may be in favor of it for the same reason that many negroes in the South were in favor of slavery, because they did not know any better.

Mr. NOLAN. Mr. Alifas, reference was made here this morning to a letter written by one of the gentlemen who is going to appear here, who is opposed to this legislation. It is a letter soliciting funds, and in that letter the statement is made that the proponents of this measure intend, provided they are successful in passing this legislation, to have legislation enacted prohibiting any private concern that does Government work from using the Taylor system in their factories on that work. Do you know anything about any movement of that kind?

Mr. ALIFAS. Personally I have never decided on promoting that particular thing myself, and I have never heard that particular thing advocated by anyone else. What we may do, I do not know, but they are not justified, as far as I know, in making that assertion. It is mere more apprehension on their part. You know they have criticized us severely for apprehending things that have not happened. Now, why do they not wait and see what happens before they oppose this legislation on that ground?

Mr. NOLAN. Well, a pretty broad statement is made in there, not that they apprehend, but that the proponents intend to do that. You have been very active, I might say, in favor of this measure, both in the last Congress and in the present Congress.

Mr. ALIFAS. Yes.

Mr. NOLAN. You do not know of any instance?

Mr. ALIFAS. I do not know of any definite movement in that direction; no, sir.

Mr. Chairman, since indulging in this colloquy there has come to my mind two other aspects of the question that I believe are important in the bearing they have on the bill before you. It has been intimated by the Chief of Ordnance that if he is not permitted to continue the Taylor system that much of the work now done in Government shops will have to be done elsewhere; especially is this true if he is not to be permitted to install piecework in some occupations. Before the Ordnance Department started to introduce the Taylor system they were apparently getting along very nicely under the former common-sense method of shop practice and were producing work economically.

For the purpose of showing just how ecomonically work has been done in the arsenals as compared to the price that has to be paid private contractors for doing the same kind of work, I would like to insert in the record at this point three tables, which were incorporated by the Chief of Ordnance in a hearing held before the Appropriations Committee of the House when it had under consideration the fortifications appropriation bill on December 12 and 15, 1913:

Comparative cost of ordnance purchased under contract and manufactured at arsenals (all costs given those of completed vehicles, except where specifically noted.)

[Extract from testimony of Brig. Gen. William Crozier on Dec. 12, 1913, before subcommittee of House Committee on Appropriations on the fortifications appropriations bill. See pp. 136 and 137 of hearing.]

Article.	Number ordered.	Under contract.				At arsenal.			
		Contract cost.	Inspection, 2 per cent.	Total cost.	Date of contract.	Actual cost.	Arsenal percentage, 8.4.	Total cost.	Date of order.
3-inch gun carriage	16	$3,332.18	$66.64	$3,398.82	Apr. 25, 1907				
	8	3,464.13	69.28	3,533.41	June 11, 1907				
	12					$2,316.05	$194.55	$2,510.00	May 28, 1907
	20					2,022.39	169.88	2,192.27	June 3, 1908
	28					1,988.47	167.87	2,166.34	Apr. 22, 1909
	12					2,181.32	183.23	2,364.55	July 11, 1910
	20					2,181.99	183.29	2,365.28	Mar. 27, 1911
3-inch gun caisson	24	1,713.16	34.26	1,747.42	May 6, 1907				
	16	1,709.90	34.20	1,744.10	June 12, 1907				
	[1] 72	1,906.81	38.13	1,944.94	Dec. 4, 1911				
	[1] 72	1,960.00	39.20	1,999.20	Dec. 5, 1911				
	86					981.56	82.45	1,064.01	June 12, 1907
	36					1,034.79	86.92	1,121.71	May 29, 1907
	24					1,134.21	95.27	1,229.48	June 3, 1908
3-inch gun limber	40	1,500.08	30.00	1,530.08	May 11, 1907				
	24	1,537.72	30.75	1,568.47	June 12, 1907				
	[1] 192	1,478.59	29.57	1,508.16	Dec. 4, 1912				
	82					610.75	51.30	662.05	June 12, 1907
	52					591.77	49.71	641.48	Do.
	32					635.81	53.41	689.22	June 3, 1908
3.8-inch howitzer caisson, model of 1911	[1] 36	2,114.40	42.28	2,156.68	Oct. 1, 1913				
	[1] 48					1,550.00	130.20	1,680.20	June 10, 1913
3.8-inch howitzer limber, model of 1911	[1] 48	1,446.00	28.92	1,474.92	Oct. 4, 1913				
	[1] 64					1,250.00	105.00	1,355.00	June 10, 1913
4.7-inch gun and 6-inch howitzer limber	24	1,035.30	20.71	1,056.01	Feb. 23, 1909				
	4					1,109.05	93.16	1,202.21	July 19, 1907
	12					775.16	65.11	840.27	July 7, 1908
	4					719.54	60.44	779.98	Jan. 19, 1909
	8					666.12	55.95	722.07	Mar. 18, 1909
	16					776.33	65.21	841.54	July 12, 1910
4.7-inch gun limber and caisson	40	3,425.00	68.50	3,493.50	Dec. 4, 1911				
	8					3,548.48	298.07	3,846.55	July 10, 1907
	24					2,608.12	219.08	2,827.20	July 7, 1908
	8					2,063.46	173.33	2,236.79	Mar. 18, 1909
	32					2,619.68	220.05	2,839.73	July 12, 1910

[1] Manufacture not completed. Cost given represents contract prices and arsenal estimates, respectively.

Comparative cost of ordnance purchased under contract and manufactured at arsenals (all costs given those of completed vehicles, except where specifically noted)—Continued.

Article.	Number ordered.	Under contract.				At arsenal.			
		Contract cost.	Inspection, 2 per cent.	Total cost.	Date of contract.	Actual cost.	Arsenal percentage, 8.4.	Total cost.	Date of order.
Reel	46	$1,901.80	$38.03	$1,939.83	June 13, 1910				
	26					$1,181.26	$99.23	$1,280.49	July 29, 1910
Cart	37	1,251.80	25.03	1,276.83	June 13, 1910				
	36					595.58	50.03	645.61	Jan. 18, 1909
4.7-inch howitzer carriage limber, model of 1908	16	2,187.55	43.75	2,231.30	June 9, 1909				
	[1] 28	1,414.80	28.29	1,443.09	Nov. 11, 1912				
	8					926.62	77.84	1,004.46	May 8, 1909
	[1] 16					926.62	77.84	1,004.46	Oct. 1, 1912
	[1] 12					926.62	77.84	1,004.46	June 10, 1913
4.7-inch howitzer carriage, model of 1908	[2] 16	5,117.48	102.35	5,219.83	Apr. 23, 1909				
	[1] 28	9,229.37	184.59	9,413.96	Nov. 7, 1912				
	[3] 8					10,843.45	910.85	11,754.30	Mar. 18, 1909
4.7-inch howitzer caisson and limber, model of 1909	48	4,010.18	80.20	4,090.38	June 9, 1909				
	[1] 84	3,356.32	67.13	3,423.45	Nov. 11, 1912				
	24					2,773.70	232.99	3,006.69	May 8, 1909
	[1] 48					2,733.70	229.63	2,963.33	Oct. 1, 1912
4.7-inch howitzer caisson, model of 1912	[1] 36	1,886.00	37.76	1,923.76	Oct. 14, 1913				
	0					1,605.76	134.88	1,740.64	(4)
4.7-inch howitzer limber, model of 1912	[1] 36	1,498.00	29.96	1,527.96	Oct. 7, 1913				
	0					1,127.94	91.75	1,221.69	(4)
6-inch howitzer carriage	[2] 24	6,937.81	138.75	7,076.56	Feb. 23, 1909				
	[3] 4					15,671.97	1,316.45	16,988.42	Jan. 19, 1909
	[3] 4					14,147.66	1,188.40	15,336.06	Mar. 18, 1009
6-inch howitzer caisson	48	1,583.03	31.66	1,614.69	May 21, 1909				
	[1] 32	1,070.00	33.40	1,703.40	Dec. 4, 1911				
	16					2,182.12	183.30	2,365.42	Apr. 19, 1909
6-inch howitzer limber	48	1,427.70	28.55	1,456.25	May 21, 1909				
	[1] 32	1,490.00	29.80	1,519.80	Dec. 4, 1911				
	16					2,038.88	171.27	2,210.15	Apr. 19, 1909

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[1] Manufacture not completed. Cost given represents contract prices and arsenal estimates, respectively.

[2] The prices at which this material was obtained under contract are exceptionally low, due to an underestimate on the part of the contractor.

[3] The cost of this material is high on account of the fact that it is a new type of material and the cost of tools, development, and experimentation were charged to these orders.

[4] None ordered; estimated cost.

Manufacture of artillery ammunition. Statement of total arsenal costs and total contract costs for ammunition being manufactured at the Frankford Arsenal and provided for in orders issued between July 1, 1912, and Apr. 25, 1913, and which will be completed by June 30, 1914.

[Extract from testimony of Brig. Gen. William Crozier on Dec. 15, 1913, before subcommittee of House Committee on Appropriations on the fortifications appropriation bill. See p. 149 of hearings.]

Articles.	Quantities under manufacture.	Total arsenal costs per unit.	Aggregate total arsenal cost.	Contract price per unit.	Contract cost per unit.	Total contract cost.	Saving over contract cost.
3-inch finished shrapnel cases	10,000	$1.75	$17,500.00	$3.06	$3.15	$31,500.00	$14,000.00
3.8 finished shrapnel cases	1,000	4.68	4,680.00	6.65	6.85	6,850.00	2,170.00
6-inch finished shrapnel cases	4,035	17.10	68,998.50	16.00	16.48	66,496.80	2,501.70
3-inch common shrapnel without fuses or base charges	48,000	3.55	170,400.00	5.79	5.96	286,080.00	115,680.00
3.8-inch common shrapnel without fuses or base charges	4,500	7.94	35,730.00	17.50	18.03	81,135.00	45,405.00
4.7-inch common shrapnel without fuses or base charges	14,500	15.45	224,025.00	25.26	26.02	377,290.00	153,265.00
6-inch common shrapnel without fuses or base charges	5,000	30.20	151,000.00	37.00	38.11	190,550.00	39,550.00
21-second combination fuses	48,000	2.16	103,680.00	4.30	4.43	212,640.00	108,960.00
31-second combination fuses	26,500	2.92	77,380.00	[1] 7.00	7.21	191,065.00	113,685.00
3-inch high explosive shrapnel, fixed	45,000	10.15	456,750.00	....	[2] 13.17	592,650.00	135,900.00
Fuse stocks	74,500	1.66	123,670.00	2.40	2.47	184,015.00	60,345.00
Rear plugs for fuses	74,500	.18	13,410.00	.23	.2369	17,649.05	4,239.05
Front plugs for fuses	74,500	.09	6,705.00	.17	.1751	13,044.95	6,339.95

[1] This was the lowest and only bid received, but no contract was made.

[2] The shrapnel projectiles only were ordered abroad, and the contract cost includes the cost of assembling the projectile to the cartridge case and charge and of the necessary rounds for firing test based on a previous order.

Grand total contract cost	$2,250,965.80
Grand total arsenal cost	1,453,928.50
Saving	797,037.30

Purchase of artillery ammunition—Statement of total contract costs and of total arsenal costs for ammunition being purchased from outside manufacturers covered by orders given between July 1, 1912, and Apr. 25, 1913, and which will be delivered before June 30, 1914.

[Extract from testimony of Brig. Gen. William Crozier on Dec. 15, 1913, before subcommittee of House Committee on Appropriations on the fortifications appropriation bill. See p. 150 of hearings.]

Articles.	Quantities ordered.	Contract price per unit.	Contract cost per unit.	Total contract cost.	Total arsenal cost per unit.	Total arsenal cost.	Contract cost over arsenal cost.
2.95-inch shrapnel case forgings	4,109	$3.06	$3.15	$12,943.35	$1.75	$7,190.75	$5,752.00
3-inch shrapnel case forgings	....	....	....	....	....	....	....
3.8-inch finished shrapnel cases	25,523	3.06	3.15	80,397.45	1.75	44,665.25	35,732.20
4.7-inch finished shrapnel cases	7,055	6.65	6.85	48,326.75	4.68	33,017.40	15,309.35
6-inch finished shrapnel cases	9,615	9.37	9.65	92,784.75	8.80	84,612.00	8,172.75
3.8-inch common shrapnel without fuses or base charges	5,760	16.00	16.48	94,294.80	17.10	98,496.00	4,201.20
4.7-inch common shrapnel without fuses or base charges	2,500	17.50	18.03	45,075.00	7.94	19,850.00	25,225.00
6-inch common shrapnel without fuses or base charges	7,000	25.26	26.02	182,140.00	15.45	108,150.00	73,990.00
3-inch common steel shell	1,500	37.00	38.11	57,165.00	30.20	45,300.00	11,865.00
3.8-inch common steel shell	3,000	4.87	5.02	15,060.00	2.39	7,170.00	7,890.00
4.7-inch common steel shell	9,066	9.17	9.45	85,673.70	4.81	43,607.46	42,066.24
6-inch common steel shell	10,605	12.46	12.83	136,062.15	8.30	88,021.50	48,040.65
3-inch fixed high-explosive shrapnel	7,077	17.93	18.47	130,712.00	16.75	118,539.75	12,172.25
	10,000	13.17	13.17	131,700.00	10.15	101,500.00	30,200.00

Grand total contract cost	$1,112,334.95
Grand total arsenal cost	800,120.11
Loss	312,214.84

The first of these tables relates to work at the Rock Island Arsenal, where the features of the system to which we object had not been introduced up to that time. It shows, for instance, that a 3-inch gun carriage which costs under contract, in lots of 16, $3,398.82 each, when manufactured in lots of 20 at the Rock Island Arsenal were manufactured for $2,192.27. This shows a saving of over $1,000 in favor of arsenal costs. The same showing can be duplicated in a large number of cases in this table.

With a showing of that kind I submit to this committee that a necessity does not exist for speeding up the workmen any more.

The other two tables relate to work done at the Frankford Arsenal, where, however, the premium system has been in operation for a number of years in part, although that is substantially the only part of the Taylor system that they have used there.

Since the prohibition against the premium system in last year's Army appropriation bill the management at the Frankford Arsenal has transferred all premium workers to piecework, and I understand that the work is costing about the same. However, the showing made in cost of doing work according to these two tables is largely the result of what is generally termed "common-sense management" as against "scientific management." In spite of this favorable showing as to costs of doing work at the Frankford Arsenal we have been led to believe that this is also one of the arsenals into which it is proposed to introduce the Taylor system. At any rate, I desire to emphasize to this committee that this favorable showing as to costs at the Frankford Arsenal is not the result of the Taylor system, since the piecework plan, which is unscientific according to Mr. Taylor, operates equally well and economically.

Many people in the United States seem to think that Government jobs are usually sinecures. This impression, I presume, dates back to the time when most Government jobs were under the spoils system. Since then, however, the civil-service law has been in operation. Employees at the arsenals and navy yards have gone through the experience of having one set of officers take charge after another, with the result that each set of officers have attempted to make a record for themselves, oftentimes by making the workmen work harder. As a result of this, if there ever has been any inefficiency in these establishments the slack has been taken out long ago, when it is considered that they change officers in many places as frequently as every two and one-half years or even oftener. In the arsenals it is not quite so frequently; perhaps every four years.

This brings me to the other point that I desire to make. It has been contended by officials at the Ordnance Department that Army officers have no incentive for introducing oppressive measures or unduly speeding up the workmen. This might be true if they expected to always be employed as Army officers, but from time to time these officers who have gained experience as managers of the department's industrial plants are offered good positions with private manufacturers. Any officer, therefore, who has ambitions to secure a managerial position at a good salary with a private concern would have a very powerful incentive to operate a Government plant as efficiently as it could be operated and to make the workmen work just as hard as they could be induced to work. At least the employees to a large extent are impressed with the belief that the officials are principally concerned with the quantity and quality of production and discipline among the workmen to the exclusion of the personal interests of the employees.

In conclusion, I desire to emphasize the fact that the opponents of the proposed legislation during the last few days have admitted that the Taylor system and similar systems are based on the law of "the survival of the fittest" and that in setting wages and standards of performances the law of supply and demand must operate.

Under these circumstances it seems to me this committee can do nothing other than disapprove the introduction of these systems in Government workshops, and I hope that every effort will be made by this committee to secure the passage of the pending bill.

I thank the committee for the privilege of appearing before them and for their considerate attention.

STATEMENT OF MR. EDWARD J. CANTWELL, SECRETARY NATIONAL ASSOCIATION OF LETTER CARRIERS, WASHINGTON, D. C.

Mr. Cantwell. Mr. Chairman and members of the Committee on Labor, I come before you to-day to enter my protest against the stop-watch or time-measuring device system in vogue in the Postal Service and to urge the committe to carefully weigh all the evidence that will be submitted to them in the hope that they will make a favorable report to the House of Representatives on a bill that will stop this practice in the future.

For the information of the committee, I submit herewith a memorandum of the speed standard and the result of a test made in the Cincinnati post office. The statement contains an explanation of the number of pieces of mail per minute that letter carriers are required to distribute and the time allowances made for handling registered mail, C. O. D. parcels, insured parcels, postage-due mail, and answering communications. Also the time allowed for performing other classes of work, such as change of addresses or marking up mail matter that has not been properly distributed, and as this is something that will explain itself, and with the permission of the committee, I will insert it in the record.

Mr. Keating. Without objection, it will be inserted.

(The statement referred to is as follows:)

SPEED STANDARD.

After making time allowances as noted below, carriers should distribute the number of pieces per minute indicated in the following tables:

Two-trip carriers.		Three-trip carriers.		Four and five trip carriers.	
Percentage.	Pieces.	Percentage.	Pieces.	Percentage.	Pieces.
10	13	10	14	10	16
15	12½	15	13½	15	15½
20	12	20	13	20	15
25	11½	25	12½	25	14½
30	11	30	12	30	14
35	10½	35	11½	35	13½
40	10	40	11	40	13
45	9½	45	10½	45	12½
50	9	50	10	50	12
60	8	60	9½		

Under "papers" is included everything except letters, circulars, and cards, time allowances should be made as follows: One minute per piece for registered mail, C. O. D. parcels, insured parcels, postage-due mail, and communications; one-half minute for each change of address order written up; one minute for each seven pieces marked up.

To arrive at the rate of speed, make proper deductions from the total office time on account of "time allowances" and divide the number of pieces of mail of all classes handled by the number which represents the net number of minutes of office time. For example, a two-trip carrier whose total office time amounts to 1 hour and 31 minutes handles 800 pieces of mail, 35 per cent of which is classed as papers; he handles 2 registered pieces, 1 postage-due piece, answers one communication, and marks up for forwarding 77 pieces and enters 4 orders. Making proper deduction for "time allowances" in accordance with above table his net office time is 91 minutes less 17 minutes. Dividing 800 by 74 we get 10.8 which shows the average number of pieces handled per minute and which should be compared with the above table.

Many carriers should be able to exceed the rates of speed indicated in the above table and no carrier should fall below the requirements. It can not be supposed that all of the carrier force can sustain their work at the standard fixed by the department, and for this reason there will be routes which are not served according to these standards. Those carriers who can not serve a standard route should be assigned to routes at those outlying stations where they would serve routes in accordance with their abilities, and these assignments should carry a less salary than that paid men serving standard routes. For instance, if it is found after a thorough test that any carrier is unable to conform to the departmental standards of work, he should if receiving the maximum salary be reduced in salary on the grounds of inefficiency, and assigned to a station where undertime according to the standard of work is unavoidable.

On October 14, 1915, a test was made of 210 carriers in the Cincinnati post office, divided as follows:

Forty-six six-trip carriers; 10 five-trip carriers; 30 four-trip carriers, 31 three-trip carriers, and 93 two-trip carriers. Out of a total of 210 men, 130 fell below the standard in this test. Of the six-trip carriers, 23 measured up to the standard and 22 fell below it. Five trippers, 2 carriers made the standard and 8 fell below; of the four trippers, 4 men made the standard and 26 fell below; of the three trippers, 8 measured up to the standard and 23 fell below; of the two trippers, 43 made the standard and 50 fell below; of the total number, 80 carriers measured up to the speed test of the department and 130 fell below.

Of the test taken on Friday, October 15, 1915, out of a total of 206 men but 72 measured up to the standard and 134 fell below the standard. I submit herewith, for the information of the committee, the results of the speed test taken on both days.

(The statements referred to are as follows:)

CINCINNATI, OHIO.

Result of speed test taken on Thursday, Oct. 14, 1915.

[Number of carriers covered by test 210; forty-six 6-trip carriers; ten 5-trip carriers; thirty 4-trip carriers; thirty-one 3-trip carriers; and ninety-three 2-trip carriers.]

Number of trips.	Number of cards, letters, circulars.	Number other classes.	Number of Reg. Ins. C. O. D.	Number postage due.	Communications answered.	Orders booked.	Forwarded marked up.
6	68,716	5,256	191	363	3	33	4,346
5	10,382	1,058	12	48	0	20	600
4	26,591	4,247	32	84	2	46	1,831
3	21,159	5,528	55	34	4	101	2,209
2	42,642	13,485	70	63	6	123	4,237
Total	169,490	29,574	360	592	15	323	13,223

Table showing time consumed actually.

[First column, time allowance according to weights given in standard table, second column, and time after allowances are deducted and by which the averages are computed are shown in the third column. Time computed in minutes.]

Number of trips.	Actual time.	Allowances.	Time.	Average.	Number of men.
6	5,810	1,195	4,615	16	46
5	1,102	158	944	12.1	10
4	2,900	402	2,498	12.3	30
3	2,848	458	2,390	11.1	31
2	6,125	805	5,320	10.5	93
Total	18,785	3,018	15,767	12.6	210

NOTE.—Fifty-six men, five and six trippers, averaged 15.3, standard 16; 30 four-trippers averaged 12.3, standard 15.5; 31 three-trippers averaged 11.1, standard 13; 93 two-trippers averaged 10.5, standard is 11.5. Out of a total of 210 men, 130 fell below standard.

Table showing the number of men in each class who attained the standard.

	Standard or better.	Lower than standard.	Total.
6 trippers	23	23	46
5 trippers	2	8	10
4 trippers	4	26	30
3 trippers	8	23	31
2 trippers	43	50	93
Total	80	130	210

CINCINNATI, OHIO.

Result of speed test taken on Friday, Oct. 15, 1915.

[Number of carriers covered by test 206; forty-four 6-trip carriers; nine 5-trip carriers; twenty-eight 4-trip carriers; thirty-four 3-trip carriers; and ninety-one 2-trip carriers.[

Number of trips.	Number of cards, letters, circulars.	Number of other classes.	Number of Reg. ins. c. o. d.	Number of communications answered.	Number of orders booked.	Forwarded marked up.	Postage due.
6	70,619	6,216	241	....	15	4,212	341
5	9,772	1,290	16	1	5	1,599	70
4	27,399	6,003	55	1	20	2,173	65
3	25,369	8,828	46	5	66	3,161	34
2	45,442	17,543	87	7	90	5,015	82
Total	178,601	39,880	445	14	196	15,160	692

Table showing the time consumed.

[First column shows the actual time, second column shows time allowances, and the third shows the time after the allowances have been deducted, and by which the averages are arrived at. Time is shown in minutes.]

Number of trips.	Actual time.	Allowances.	Time.	Average.	Number of men.
6	5,747	1,190	4,557	16.8	44
5	1,052	174	878	12.5	9
4	3,152	441	2,711	12.3	28
3	3,709	569	3,240	10.5	34
2	7,233	937	6,196	10.3	91
Total	20,893	3,311	17,582	12.4	206

NOTE.—Forty-four 6-trippers averaged 16.8, 10 per cent of papers standard demanded 16; nine 5-trippers averaged 12.5, 10 per cent of papers standard demanded 16; twenty-eight 4-trippers averaged 12.3, 20 per cent papers, standard demanded 15; thirty-four 3-trippers averaged 10.5, 25 per cent papers standard demands 12.5; ninety-one 2-trippers averaged 10.1, 35 per cent papers, standard demands 10.5. Out of a total of 206 men 134 fell below the standard.

Table showing the number of men in each class who attained the standard.

	Standard or better.	Lower than standard.	Total.
6-trippers	22	22	44
5-trippers	1	8	9
4-trippers	6	22	28
3-trippers	9	25	34
2-trippers	34	57	91
Total	72	134	206

In the speed tests an allowance of one minute is made for answering communications. It hardly seems reasonable to suppose that any man could answer a communication from his superior officer in one minute. In answering an official communication it must be drawn up intelligently and contain the information sought by the official and couched in respectful language. I will leave for the committee to judge whether there is one among us who could pick up an official document requesting a reply, read it, and make an intelligent answer in writing in the space of one mine. For example, the superintendent of a post office hands an official communication to a letter carrier reading as follows:

> Complaint is made by Mr. Edward Keating, formerly of Congress Hall, that his mail is being left at that address, although he filed an order to forward his mail to the Continental Hotel.

On receipt of this communication, the carrier must first ascertain if the accusation be true. He knows that for the past several days he has forwarded Mr. Keating's mail to the Continental Hotel, and he further knows that the order to forward is only 3 days old, so he calls at Congress Hall and inquires if he, by any chance, left a letter for Mr. Keating at any time, and is told by the clerk that a letter was left for Mr. Keating on the morning of the day that he left the hotel, and that he had sent one of the employees to the Continental Hotel the next day with the letter. Mr. Keating had not filed a removal notice until the day following his removal from Congress Hall, hence at the time the letter was delivered at Congress Hall no order was on file to forward his mail. This must be made clear to the superintendent, so the carrier writes him as follows:

MARCH 30, 1916.

MR. CARL C. VAN DYKE,
Superintendent of Mails, Washington, D. C.

SIR: Replying to the attached communication, I beg to advise that I have forwarded all mail addressed to Mr. Keating to the Continental Hotel as per order since the order was received by me, but prior to the filing of the order and after he left Congress Hall a letter was delivered there for Mr. Keating, which was later taken by an employee and delivered to the Continental Hotel.

Respectfully submitted.

JAMES P. MAHER, *Carrier 496.*

This answer is intended to make it clear to Mr. Keating that his mail is receiving the proper attention, and explains the reason the delivery of the letter to him by the employee of the Congress Hall Hotel was due to his failure to file a removal notice until the day after he had left. Now, anything less than this would not answer the purpose, and no man living could write the above in one minute. What I mean by that is that he could not take that official communication, read it, and find out what the assistant superintendent wanted to know, and then compose a letter and answer it in one minute's time.

One-half minute is allowed for change of address, which is not sufficient for the purpose, unless a letter carrier can make all the changes of address from memory and not be compelled to consult his removal book. Should a letter carrier make a change of address from memory and forward a letter to the wrong address the letter is delayed, and the carrier is disciplined by having demerits charged against his record. To mark up and forward seven pieces of mail per minute depends entirely on the character of the marking up. If it is simply to mark the number of the district on which the letter is to be delivered, seven pieces of mail could be readily marked up in one minute. If, however, one or more pieces of mail requires looking up in an order or removal book, it would be a physical impossibility to mark up seven pieces of mail in one minute.

For the further information of the committee, I submit herewith a copy of a communication issued to the post-office clerks and letter carriers of Chicago, Ill., of the speed tests required of the employees in that city.

(The letter referred to is as follows:)

POST OFFICE, CHICAGO, ILL.,
Delivery Division, January 29, 1915.

Circular No. 7.
Subject: Rating of clerks and carriers.
Superintendents of stations:

Superintendents of stations will submit as soon as possible, in C. P. O. Form 3990, efficiency ratings for all clerks and carriers assigned to their respective stations on the quantity and quality of work performed during the year ending November 30, 1914.

The next efficiency ratings following the above will be given for the six months from December 1, 1914, to May 31, 1915, and shall be submitted hereafter semiannually, December 1 and June 1, respectively, on C. P. O. Form 3990.

The efficiency rating of each employee from December 1, 1914, on shall be determined on his record for attendance, adaptability, speed, accuracy, and efficiency, and the relative value of each subject shall be charged as follows:

	Points.
Perfect in attendance, one-fifth point off for each day absent	14
Perfect in adaptability	12

Adaptability of clerks shall be determined by their availability for any clerical duty, application, appearance, and courtesy.

Adaptability of carriers shall be determined by periodical tests as to the manner in which they memorize removals and dispose of their "overs"; their application, general appearance, and courtesy in the office and in the field.

Maximum in speed, 12 points.

To be given as follows:

Clerk distributing—	
50 cards per minute on examination	12
45 cards per minute on examination	11
40 cards per minute on examination	10
35 cards per minute on examination	9
30 cards per minute on examination	8
25 cards per minute on examination	6
20 cards per minute on examination	3
16 cards per minute on examination (but qualifies)	0
Carriers routing and trying out on exclusive:	
Firm districts—	
40 pieces per minute on test	12
35 pieces per minute on test	11
30 pieces per minute on test	8
25 pieces per minute on test	5
20 pieces per minute on test	2
Under 20 pieces per minute on test	0

Carriers routing and trying out on exclusive—Continued:

Office-building districts—

35 pieces per minute on test	12
30 pieces per minute on test	11
25 pieces per minute on test	8
20 pieces per minute on test	5
17 pices per minute on test	2
Under 17 pieces per minute on test	0

Mixed business and residence districts—

25 pieces per minute on test	12
23 pieces per minute on test	11
20 pieces per minute on test	9
17 pieces per minue in test	6
15 pieces per minute on test	2
Under 15 pieces per minute on test	0

Three-trip residence districts—

20 pieces per minute on test	12
19 pieces per minute on test	11
17 pieces per minute on test	9
15 pieces per minute on test	6
13 pieces per minute on test	2
Under 13 pieces per minute on test	0

Two-trip residence districts—

18 pieces per minute on test	12
17 pieces per minute on test	11
16 pieces per minute on test	9
15 pieces per minute on test	7
14 pieces per minute on test	5
12 pieces per minute on test	2
Under 12 pieces per minute on test	0

Accurate observance of the working schedule by carriers, 12 points. To be determined by weekly periods for first trip in each month of the year.

Where a carrier averages schedule leaving and returning on first trip for each weekly period he shall receive 12 points.

For an average of each minute excess of the schedule as outlined above he shall lose one-half of a point.

Accuracy in the distribution of mail by clerks, 12 points.

Standard for maximum points, 99.50 per cent correct on case examination:

99.50 per cent correct	12
99 per cent correct	11
98.50 per cent correct	10
98 per cent correct	9
97.50 per cent correct	7
97 per cent correct	5
96 per cent correct	3
95 per cent correct (but qualifies)	0

Perfection in all of the above subjects shall entitle an employee to 50 points on efficiency, and the net result would give an employee an efficiency rating of 100.

For example, should an employee's record and service be such that it would earn him 13.80 points for attendance, 11 points for adaptability, 11 points for speed, 11 points for accuracy, the points earned for efficiency would be 47, or a sum total of 93.80 points, which would be the rating earned.

All clerks assigned to stations, except those who are engaged entirely in cage work, must be examined on distribution and assigned to the distribution of mail upon receipt of each dispatch. Cage clerks who perform no distribution shall be rated on speed and accuracy, in accordance with the superintendent's judgment and observation as to their ability to perform the duties assigned them.

LE ROY T. STEWARD,
Superintendent of Delivery.

The pace set in these tests is beyond the physical and mental endurance of an ordinary man, and if lived up to would result in the breaking down under the strain of any human being. The tests could possibly be made by a man of extraordinary ability and training for a period of 1 hour when a man is at his best. No ordinary man could stand the pace and maintain all the requirements set out in the rules and regulations covering these speed tests. The system has a tendency to make mere machines of men and to destroy all initiative and to have them lose personal interest in their work. This system destroys harmony of effort and cooperation between the officials and the working forces and with resultant harm to the public service. It seems to me to be poor policy on the part of the Government to institute a system among its employees that takes away from them the incentive to take pride in their work. It is carrying the policy of economy to extremes and has the tendency to foster discontent and unrest among the men who do the real hard work.

I will now cite a condition that prevails in the postal service that to my mind is without justification or excuse. I have presented to the committee copies of the department's speed standard, which in themselves are worthy of the serious thought and consideration of the members of the committee. The strain incident to keeping up with this so-called standard of efficiency is heartbreaking in the extreme, but the condition of the employees is aggravated by what is termed "the secret tests." Each carrier is subjected to this so-called speed test on one day of each month, the day and date being unknown to the carrier and the testing being secretly made. The purpose of these secret speed tests is to keep all the men working at top speed mentally and physically every minute each day, as the carriers do not know what day they are being tested.

On the day a carrier is subjected to the test, I have been informed, inspectors secretly count the pieces of mail of all classes that the employee handles that day, before the carrier receives his mail for routing. Several weeks after these secret tests are made the employee receives a letter to the effect that he is "not working up to a standard satisfactory to the office." A concise statement is embodied in the letter, showing the number of pieces of mail the carrier handled and how far he fell below the required standard. The communication contains a statement to the effect that "it is hoped you will take such steps in the future to bring your work up to a standard as not to make it necessary to write you again concerning it."

I will leave to the judgment of the committee the class of man and kind of mind that could conceive putting these secret tests into force and effect in order to keep men working under a constant mental and physical strain. I also leave to your consideration the sort of mental and physical condition a man of nervous temperament will be in at the end of his day's work. When employees who are honest and upright and conscientious are subjected to this constant suspicion and continual driving, they can not do good work. They are required to keep up the tests regardless of whether the conditions are favorable or unfavorable. Inclement weather, snow, rain, or icy sidewalks, poor or irregular car service or freezing cold cuts no figure when the secret tests are being made. Such a system can only result in breaking down the health of the employees who are required to keep up with it or will result in making mental wrecks of employees of a high-strung and nervous disposition.

I have placed before you a statement of the facts gathered together from the complaints of the letter carriers in all parts of the country and I appeal to you in their behalf to make a favorable report on the Van Dyke or Tavenner bills, with a recommendation to the Congress that it be enacted into law.

Mr. VAN DYKE. With your permission, I would like to ask you a few questions relative to the Postal Service, because I have to attend another subcommittee meeting. I ask you these questions simply to clear up a condition of mind that seems to exist through the country. I have here the Engineering Magazine for April, which goes on to give this bill and then says:

> A similar bill introduced by Congressman Van Dyke on the same day, on January 11, 1916, would prohibit all time studies throughout our entire Postal Service, in which the element of time is of obvious and fundamental importance.

I do not take issue with the editor of this paper or magazine, for the simple reason that I presume he does not know blue-tagged mail from any other kind, and does not know the difference between a two-tripper and a three-tripper, consequently he is not in a position to speak with any authority on the Postal Service. But you are here representing an organization, which is a different thing. In that bill I have introduced an entirely different proposition from any that has ever been introduced here before, and that is when we make the statement, "or other time-measuring system," because in the Government service, especially in some cases, they do not have a stop watch, or other mechanical device, but they have a time-measuring system which is obnoxious, especially in the Railway Mail Service, and is it not your opinion, and I presume of all the others that will follow you, in regard to the Railway Mail Service, the Postal Service, the carrier service—you represent the carriers?

Mr. CANTWELL. The city letter carriers.

Mr. VAN DYKE. By questioning a previous witness I find that there are 35,000 men in all the arsenals and navy yards who might come under this Taylor system if it were in vogue. As a matter of fact, it has been my experience in the service that they already have a time-measuring system in the Postal Service. Is not that correct?

Mr. CANTWELL. Well, they have what——

Mr. VAN DYKE. In your service have you a pedometer, for instance?

Mr. CANTWELL. That system has not been in effect generally in our service.

Mr. VAN DYKE. I do not mean, you understand, Mr. Cantwell, the Taylor system, or I do not mean any named system, but I mean a time-measuring system of some kind or other in the Postal Service.

Mr. CANTWELL. They are trying to install it. They have not got it in effect yet.

Mr. VAN DYKE. But they have used in the past such a thing as a pedometer on the leg of a carrier when he is started out on his route?

Mr. CANTWELL. Yes; they have.

Mr. VAN DYKE. See if I am right in these figures. They have 125,000 postal employees in the country?

Mr. CANTWELL. Yes; in all branches of the service except postmasters.

Mr. KEATING. Do they put these time-measuring devices on the legs of postmasters?

Mr. CANTWELL. No; I have not heard of any, Mr. Chairman.

Mr. VAN DYKE. The point I want to get at is simply this. We have heard here for several days a great number of eminent men throughout the country, among them a gentleman whose name appears here in this paper, by the name of Henry R. Towne, who admitted that if there were abuses in the Postal Service of this country such as I have stated that they should be rectified. Now, it seems to me, and I just wanted to know your opinion on this subject, whether or not the abuses which are in the service, and the systems which they are inaugurating at the present time throughout the country in the Postal System are not of sufficient danger to the welfare of the employees, so that a bill of this kind should be passed in order to rectify that condition?

Mr. CANTWELL. They unquestionably are, and they are becoming more aggravated every day.

Mr. VAN DYKE. They have talked entirely, so far, upon arsenals and navy yards, which contain 35,000 employees. Here we have another branch with 125,000 directly affected, that they have not talked of to any great extent, and the bill, as I understand it, deals entirely with Government employees. There is no other branch of the Government service, or of private endeavor on earth, is there, that uses postal employees?

Mr. CANTWELL. No.

Mr. VAN DYKE. It is a matter entirely of governmental regulation?

Mr. CANTWELL. It is a Government monopoly, and the knowledge of the employee, no matter how valuable he might be, or how expert he might become in the Postal Service, can not be sold in any other direction.

Mr. VAN DYKE. Then, as a matter of fact, a bill of this kind has nothing to do with private employers at all, but simply corrects abuses which are prevalent within the Postal Service?

Mr. CANTWELL. That is all; and that, I take it, the bill intends to do.

Mr. NOLAN. How long have those secret speed tests been in effect?

Mr. CANTWELL. Well, I could not tell that, Mr. Nolan. The information that I have given you here has been received from time to time from the employees in the different parts of the country.

Mr. NOLAN. How long is it since you first heard of them—the secret tests?

Mr. CANTWELL. Well, I am not sure about that, but I think it was in January. I have the correspondence in my office.

Mr. NOLAN. What I want to get at is whether it was recently, or does it pass over a period of years?

Mr. CANTWELL. Oh, no. They only started to put these tests into effect—this so-called efficiency system—a year ago last February.

Mr. NOLAN. The reason I asked that question was that I wanted to know if it had been in operation for any considerable number of years, and what effect it had. The very fact of it not having been in effect for a great many years is a reason why the effect of it on the carriers is not shown as yet?

Mr. CANTWELL. No; it has not shown as yet.

Mr. NOLAN. What is your impression as to its effect, being applied over a period of four or five years, on the letter carriers generally throughout this country?

Mr. CANTWELL. Well, it would affect the personnel of the service, in my opinion, every 12 months. No man could live under the strain. The discipline in the Postal Service is peculiar unto itself. When a man enters the service as a substitute employee he must measure up to the standard required of him. If, for instance, he is assigned two days or three days a week to different districts, and it is found that he can not measure up to the standard that is required of him—in other words, that he can not cover the district in schedule time—without further ado he is dropped from the service, because his probationary period not only extends over his substitute service, which may cover from three to five years, but he does not receive a regular appointment until six months after he has got a regular job, and that may be five years after the time that he is first appointed.

Mr. Nolan. There is another question I wanted to ask you about that. If this thing is carried out and allowed to continue, at what age do you think the average letter carried would be dropped from the service? In other words, at what age would a man feel its effects and not be able to keep up sufficiently to meet the requirements of the Postal Service?

Mr. Cantwell. That would all depend upon the temperament of the man.

Mr. Nolan. The intent of the question was to take the average man, not the exceptional man who would be able to last a long time, or the man that might drop out at the earliest possible moment, but at what period of life, in your estimation, would the average man be forced out of the service?

Mr. Cantwell. If he was not confined in the lunatic asylum from the effect of the system, he would be an old man before he was 30, unless you would get some placid fellow whom nothing would bother, but they do not make good post-office men. It requires a man who takes personal pride and interest in his work to make a successful letter carrier. He is meeting the public. You know yourself that if your letter carrier comes along in the morning, and he has a letter for you, and he has got a pleasant look or a pleasant word, or gives you a little piece of gossip, you naturally form a sort of affection for him. Now, if he comes along with a grouch on, the children do not want to speak to him, the women folks in the house do not care to go to the door to meet him, and you hear of these things after you come from your work, and you commence to feel that that fellow should not be carrying mail around, and he does not last. He has got to adapt himself to the service.

Mr. Nolan. A man does not last very long in the Postal Service in any department after complaints are made against him, anyway, does he?

Mr. Cantwell. No; he must answer officially every complaint that is made against him, and if it is found that he is unfit for delivery work, they transfer him to collection work, and if he does not make good there, he is dropped out of the service. It is my opinion that if you were to make inquiry of the Civil Service Commission you would find that the personnel of the Postal Service changes at least every 10 years now.

Mr. Keating. You mean by that that there is a complete turning over?

Mr. Cantwell. A complete turning over. I will venture the opinion that there is a turnover every seven years.

Mr. **Keating.** To what do you attribute that?

Mr. **Cantwell.** Well, to the discipline in the service, and to the fact that when the men enter the service they find it is something different than they had bargained for. They go into the service on the statements that they either read or hear of its being a good job. A young fellow that is not long out of school, working in a factory or office, with no immediate prospects of going ahead, thinks $100 a month is a good job, so he takes the examination, and if he is successful he receives an appointment. Well, he finds out that he does not receive a regular appointment at all. He is appointed as a substitute, and it is my information that 50 per cent of them resign within the first six months, out of sheer disappointment and disgust, when they find out what they are really up against.

Mr. **Nolan.** Now, this $1,200 salary does not apply to all of the offices in the United States?

Mr. **Cantwell.** It is the highest grade that a letter carrier can receive in the first-class offices, and it takes a carrier, on an average, nine years, with a perfect record, before he can reach that grade. Under the most favorable circumstances his average period of time is nine years before he reaches the maximum grade of $1,200.

Mr. **Nolan.** What is the maximum in second-class post offices?

Mr. **Cantwell.** In second-class offices it is $1,100.

Mr. **Nolan.** Is there another salary limit in third-class offices for letter carriers?

Mr. **Cantwell.** $1,100 is the maximum that a carrier in a second-class office can get.

Mr. **Nolan.** Is there a third-class office in the cities?

Mr. **Cantwell.** No; I do not think so; and if there is, there would not be any other grade for them.

Mr. **Keating.** Thank you, very much, Mr. Cantwell.

Mr. **Cantwell.** I want to thank the committee for this opportunity of presenting this statement here to them.

STATEMENT OF MR. FRANK T. ROGERS, PRESIDENT OF THE UNITED NATIONAL ASSOCIATION OF POST-OFFICE CLERKS, CHICAGO, ILL.

Mr. **Rogers.** Mr. Chairman and gentlemn of the committee, I am president of the United National Association of Post Office Clerks, representing more than 28,000 post-office clerks in the first and second class post offices of the United States. I am here to advocate favorable action by your committee on the bill, H. R. 8665, introduced by Representative Tavenner on January 1, 1916. entitled "A bill to regulate the method of directing the work of Government employees." The membership of the association that I have the honor to represent is heartily in favor of this proposed legislation, the purpose of which is to make it unlawful. to make or cause to make, with a stop watch or any other time-measuring system. a time study of any job of any employee of the United States Government, for the purpose of fixing a standard of service requirements for said employees.

I wish to bring to the attention of the committee a resolution protesting against the introduction of the stop-watch or "speed-up" system in the Postal Service. which was unanimously adopted by the sixteenth annual convention of our association, held at Los Angeles, Cal., September 6 to 9, inclusive, 1915. The resolution is as follows:

> Whereas the post-office clerks of the country have been greatly disturbed because of the introduction of so-called efficiency systems in various first and second class post offices, which are based almost entirely upon speed tests as measured by the stop watch; and
>
> Whereas these recently adopted speed-test systems have never been recognized in any officially promulgated order of the department; and
>
> Whereas the Railway Mail Service, as the result of a disastrous experiment with the speed-up system has seen fit to officially abandon the same; be it
>
> *Resolved*, That the U. N. A. P. O. C., in sixteenth annual convention assembled, does earnestly petition the Bureau of the First Assistant Postmaster General to eliminate the so-called speed-up system from the new efficiency system which is in course of construction for the guidance of post-office clerks.

Because of the feeling of discontent prevailing in the Postal Service due to the gradual but persistent introduction of the stop watch, I had occasion to dwell upon this subject in the report which I submitted to our sixteenth annual convention, held at Los Angeles, September 6 to 9, inclusive, 1915, and I wish to direct the attention of the committee to that part of my report dealing with this important subject, to the following effect:

> Efficiency in the Postal Service is something that our association has always stood for. We have overlooked no opportunity to proclaim devotion of our association and its members to the highest ideals of service.
>
> We believe the average American citizen is a believer in efficient service. We believe that on the average he may be depended upon to have a conscientious sense of loyalty to his employer, whoever that employer might be, either the Government or private individual. But of late years the term "efficiency" has come to mean something else to post-office employees.
>
> As a result of modern conditions, the word "efficiency" has wrongfully come to be accepted as synonymous with the "stop watch" and the "Taylor system."
>
> For a number of years the employees of the Railway Mail Service have been agitated and disturbed to the point where real efficiency became a joke, because of the introduction of the stop watch and speed tests in that branch of the service. To such an extent did the discontent prevail and so complete was the resulting disorganization that those in charge of the Railway Mail Service recently issued an order discontinuing the speed test and the use of the stop watch as measures of the capacity and efficiency of its employees. It is to be hoped that the lessons learned in the Railway Mail Service will be of profit to those in charge of the post-office clerks in first and second class post offices.
>
> Already there are numerous signs that the wave of efficiency madness which swept the country is receding and that common-sense methods are again being restored. It must be recognized that men can not be reduced to mere automatons. The nearer they approach the automaton, the greater the reaction naturally is against the system which accomplished the result.
>
> The first efficiency system to be established in the Postal Service, in so far as is known, was introduced by the then First Assistant Postmaster General in November, 1908. The purpose of its promulgation was to secure something approaching uniform conditions and practices in the first and second class post offices of the country and to make it more possible to properly administer the salary classification law which was enacted in 1907.
>
> Naturally, experience developed the necessity for changes from time to time in the system as promulgated in 1908.
>
> However, the system in the main stands as the only efficiency system recognied by the department. While there have been objections voiced by our association, from time to time, as to certain features of the system of 1908, it is recognized that in the main it is founded upon ideas that might be practicable in operation.
>
> By way of correcting such errors as were discovered in the original system the department announced more than a year ago that a commission was at work to revise the efficiency system.
>
> Up to the time that this report is prepared the findings of the commission have not been made known.

It is to be earnestly hoped that when the new system is published it will take heed of the example set by the Railway Mail Service and discard entirely the speed test.

At the last session of Congress legislation was enacted specifically prohibiting the use of the stop watch or other time-measuring device as aids to the determination of efficiency in the navy yards and arsenals of this country. To such an extent had the so-called Taylor system and the use of the stop watch been employed in these institutions that there was open rebellion. The fact that the Congress of the United States adopted legislation placing restrictions upon an administrative branch of the Government shows how seriously Congress views the situation.

No reasoning man can say that there is any more cause why the principles of the Taylor system or the use of the stop watch should be introduced into the Postal Service than into the arsenals and navy yards of the country.

The fact that Congress, by direct action, demanded that the use of these instruments be done away with in the navy yards and arsenals, should be seriously heeded by those local supervisory officers in the Postal Service who, through a sense of mistaken zeal, would endeavor to introduce the same methods into the Postal Service.

Already there is so much alarm felt in the Postal Service because of the insidious introduction of these systems that Senator Borah, of Idaho, on February 11, 1915, gave notice to the Senate of the United States that it was his intention to propose as an amendment to the Post Office appropriation bill, when it should be under consideration, the following proposed amendment:

"*Provided,* That no part of the appropriation made by this bill shall be available for the salaries or pay of any official, superintendent, foreman, or other person having charge of the work of any employees of the Postal Service who makes or causes to be made with a stop-watch or other time-measuring device a time study of the movements of any such employee, or who uses the results of records obtained by a stop-watch or time-measuring device in determining what amount of labor is to be done in a given time by such employee."

Unfortunately, Senator Borah was ill at the time the Post Office appropriation bill was under consideration in the Senate. Had he been present I have no doubt that the Senate, following its precedent in adopting similar resolutions concerning the navy yards and arsenals of the country, would have adopted his proposoed amendment.

Notwithstanding the fact that the efficiency system which the department promulgated in 1908 stands as the only authentic one which post-office clerks are supposed to recognize, it is a matter of common knowledge that in some of the larger cities of the country local so-called efficiency systems have been put into effect and are in operation. It is true that these local systems, apparently introduced without the sanction of the department, are being used to determine the status of post-office clerks and frequently result in their demotion. It is also true that these systems which are causing alarm among post-office clerks are based almost entirely upon the element of speed.

It seems that the only lasting protection which the post-office clerks can have against the introduction of these local, unauthorized systems is through the enactment of legislation such as was contemplated by Senator Borah in his proposed amendment of last year.

As an example of what conditions result from the establishment of local unauthorized so-called efficiency systems, let me recite a possible circumstance. To-day the department recognizes a case examination record of 95 per cent with 16 cards thrown per minute as satisfactory evidence of efficiency.

Under a local system which has been brought forcefully to my attention, it would be possible for a clerk attaining this record and having in addition thereto a perfect record of adaptability, and without a single demerit, to be given such a miserable final average as to compel his reduction in salary. The miserable average attained would be due entirely to the lack of credits imposed by virture of the speed element of the local system in question. Yet the department officially ordered that credits be abandoned. I cite this circumstance as an instance of how completely the department's general efficiency system is being disregarded.

I am told that the commission appointed by the First Assistant Postmaster General to perfect the new efficiency system of the department will be ready to report in the very near future.

By the way of paraphrasing, let me exclaim, "Oh, efficiency! What sins are committed in thy name!"

Efficiency in the Postal Service is something that our association has always stood for. We have overlooked no opportunity to proclaim the devotion of our association to the highest ideals of service.

We believe that the average American citizen is a believer in efficient service. We believe that, on the average, he may be depended upon to have a conscientious sense of loyalty to his employer, whoever that employer might be, either the Government or a private individual.

But of late years the term "efficiency" has come to mean something else to the man who toils.

To-day there is abroad in our land a fair-sized army of gentlemen supposed to be possessed of nimble wits, and supposed to be possessed of stony hearts, who have seized upon the madness of the times to couple up their names with such high-sounding titles as "efficiency engineers," "scientific managers," etc.

Some day, when the normal is again resumed and sanity in the industrial and business world restored these gentlemen, living at the present time on fancy salaries because of their supposed ability to fatten the earning capacity of various institutions, will be looked upon and recognized for what they really are—not "efficiency experts," but, if the phrase may be employed, "efficiency dilettantes."

As a result of their wiles sound-headed and whole-hearted business men have temporarily come to believe that the sound principles which they heretofore employed in measuring the worth of a man's services were all wrong. We have come to hear much of the so-called "Taylor efficiency system" which has been applied in numerous private industries, and, in varying forms, has come to be saddled upon some of the departments of the Government. And why has it come to be saddled upon the Government? This question has been answered by qualified critics of these extravagant efficiency notions, who have pointed out that in large institutions there is always a percentage of conscienceless and ambitious men who are willing to rise to places of personal advantage by permitting themselves to be the instruments of hammering down the hatches and nailing the doors of hope in the faces of the masses of honest-intentioned and capable fellow employees.

To such an extent has the so-called Taylor system, which first introduced the stop watch in the hands of a supervisor to compel the maximum degree of continued exertion of employees, been employed in some of the departments of the Government service that Congress itself was compelled to take cognizance of the situation. In the last session of Congress amendments were adopted to both the Army and Navy appropriation bills which prohibit in specific terms the further use of a stop watch or other time-measuring device or time study of the work of any employee engaged in civil occupations in certain branches of the Army and Navy Departments.

The debate which preceded the adoption by Congress of these amendments, aimed at the prevention of these "killing systems," was indeed illuminating. Many pages might be filled were we to attempt to quote in full all of the opinions of the various Representatives and Senators who addressed the Congress on the subject. From such an acknowledged conservative as Senator Lodge, of Massachusetts, addressing the Senate upon this subject, I wish to quote the following statement:

The one object of the time measure is to produce speed. Now speed is not the only thing that the Government or any other employer or manufacturer is seeking for. There is something more important than speed, and that is quality. Speed has nothing to do with quality. Owing to great inventions of our time, owing to steam and electricity, we have carried speed to such an extent in all of our manufactures that certainly in many cases the product has deteriorated in quality as it has advanced in quantity and rapidity of production.

The stop watch and the time measure can tell you nothing whatever about quality. It may be a basis of fixing wages or anything else, but the only thing we can possibly tell by time is speed. We all associate a stop watch with its use for racing horses. I dare say it is used now for racing automobiles, but not by a man buying horses for his ordinary use. In the days before automobiles I used to own horses and be very fond of them and drove them a great deal, but I never put a stop watch on a horse I was going to buy. I wanted to know his qualities; I wanted to try him; but I was not going to buy a horse to use on the track, and therefore I had no use for the stop watch. They use a stop watch to test a horse that is going on the track to race in the Derby, for instance, or in any of our great races. It is of the utmost importance to know what the horse can do on the furlong, or on the quarter mile or on the half mile, but it does not tell the story of his quality. It will tell the story of speed and the qualities necessary to speed, but there are many qualities it does not tell.

Now, to put the stop watch on human beings may tell how fast they can work, but it can tell nothing of the quality of their work. Nor how long they may work. A horse may be very good for a short spurt and absolutely worthless for a 4-mile race. It is a poor test. It is a promoter of the idea that the one thing to do is to turn out just as much as we can just as far as we can. That has gone through everything in this period of ours. It has deteriorated style, it has deteriorated literature, it has deteriorated art. It is deteriorating manufacture.

I do not believe, Mr. Chairman, in standing over men with stop watches to see how far they can go under pressure in securing speed in performing a given piece of work. The very fact of a stop watch implies strain on every faculty, on every physical power, driving the heart and lungs and every muscle to the utmost possible point.

In the days of slavery it was said there was one school of slave owners who believed it was more profitable to work the slaves to the last possible point and let them die than to try and care for them when they were ill and work them reasonable hours and treat them without a stop watch. Those who believed in working them to death, I imagine, were a very small and merciless minority, but there is always that disposition.

I am a thorough believer in the best man getting the best wage and the hard-working man getting what his hard work deserves. I have no desire to see the thriftless and idle paid as well as the industrious, steady, and hard-working men, but I do not believe anything is gained for the Government or for anybody else in standing over a man with a stop watch to see whether under pressure he can do a certain piece of work in a given time. I do not believe it is sound economy.

I quote this extract from the remarks of Senator Lodge because of his known conservatism and because he will not be accused of letting his sympathy run away with his judgment. I could quote from the speeches of other Senators decidedly more radical in their objections to the continued introduction of stop watches and other time-measuring devices into the Government service.

While this particular debate in Congress had to do with conditions in certain departments of the Army and Navy, there are plenty of signs pointing to the incontrovertible fact that these same systems of men-destroying speed mania are being further introduced into the Postal Service. Such threatening proportions have the conditions in the Postal Service assumed that Senator Borah, of Idaho, was compelled to take cognizance of the situation. On February 11, 1915, he gave notice in the Senate of the United States that it was his intention to propose as an amendment of the Post Office appropriation bill when it should be under consideration, the following:

> *Provided,* That no part of the appropriations made in this bill shall be available for the salaries or pay of any official, superintendent, foreman, or other person having charge of the work of any employee of the Postal Service who makes or causes to be made with a stop watch or other time-measuring device a time study of the movements of any such employee, or who uses the results of records obtained by a stop watch or time-measuring device in determining what amount of labor is to be done in a given time by such employee.

When the Post Office appropriation bill was under consideration in the Senate, Senator Borah was compelled to be absent from the Senate Chamber because of an acute attack of illness. Had he been present he would have urged upon the Senate the adoption of this amendment, and in view of the fact that the Congress had already adopted similar amendments applying to the War Department and Navy Department, it is fair to assume that the amendment of Senator Borah would have become law.

In the face of this aroused public sentiment, it would seem that those postal officials who have given themselves over to the madness of imposing their speed mania upon the employees would give heed.

The first efficiency system introduced into the Postal Service was promulgated by the then First Assistant Postmaster General, C. P. Grandfield, under date of November 23, 1908. The efficiency system then promulgated was to govern promotions under the provisions of the classification law of 1907.

This system as then promulgated is still in vogue in all of its essentials in so far as any general order issued by the department to the contrary is concerned.

It is interesting to note that this efficiency system promulgated in 1908 and still officially recognized by the department, provided among other things for the examination of employees engaged in the distribution of mail. It exacted a record of 95 per cent correct, and it recognized as a standard an average of 16 cards thrown correctly per minute.

Within the last year supervisory officers in certain of our post offices have put into effect efficiency systems wholly at variance with the system promulgated by the department and which exact conditions never dreamed of by the experts who framed and put into effect the system inaugurated by the department. The stop-watch idea is being put into effect in some post offices with a vengance. Imagine a condition now prevailing, to some extent, of demanding 45 cards correctly thrown per minute. Compare that with the standard recognized in the first instance.

The present administration of the Postal Service has set for itself as one of its highest ideals the task of standardizing postal methods throughout the Postal Service. To this end, various commissions have been visiting the different post offices of the country. It is said that one who served on a number of these commisisons, evidently being a gentleman possessed of some humor, remarked that the next task confronting the administration would be to standardize the standardizing committees. It is presumed he meant to imply that even the standardization committees differ as to standards.

I submit that the department in the interest of real efficiency and standardization, an end should be put to the indiscriminate establishment of local systems of efficiency wholly in conflict with what the clerks have been taught to believe is the standard set by the department in 1908 and never officially repealed.

It is known that the department has had under earnest consideration for upward of a year the creation of an entirely new efficiency system, which, however, is to be uniform in its application to offices where like conditions prevail. Let us hope that the day will be speeded when this system will be put into effect, for certainly it is bound to be an improvement on the excesses which are now being practiced in certain offices by overzealous local supervisory officers who have only in mind the thought of making a record for themselves, without any true conception of the true value of conserving to the Postal Service the talents and the unpurchasable element of the good will of the employees, which is an element of efficiency which can not be measured by any known system. Let the day be speeded when greater personal responsibility for the performance of their duty by employees under them will be rested on the shoulders of truly competent supervising officers.

Oh, how truly has it been said that "when fatigue sets in efficiency ends." If the "efficiency dilettantes" of the Postal Service can but comprehend this great truth, they will have recognized the truest principles of real efficiency.

In conclusion, let me again direct the attention of this committee to the fact that the "speed test" was given a thorough trial in the Railway Mail Service and had to be abandoned.

By an order, effective May 25, 1915, signed by Mr. J. P. Johnston, the general superintendent of the Railway Mail Service, the "speed test" was officially rejected.

This order of the general superintendent was issued following a unanimous recommendation made by all of the division superintendents of the Railway Mail Service. The division superintendents in conference adopted a resolution advising that for service reasons the "speed test" be discontinued.

One of the division superintendents who participated in this conference made the following statement:

> After considering the question thoroughly, we decided that it was for the best interests not only of the service, but of the clerks as well, that the speed tests be abolished as a part of our efficiency rating system.
>
> There are two reasons for this. The first is that the speed test is extremely difficult to apply, so that the basic principle involved in it could not be applied with fairness and justice either to the clerks or to the service.
>
> The second reason for the action taken by the superintendents is that this test could not be so administered as to get from it a true rating, so far as the efficiency of any of the clerks is concerned.

Notwithstanding this sad experience that the Railway Mail Service had with the "speed up" system, other branches of the Postal Service continue to employ the same.

Not only are clerks engaged in the distribution of mail timed with a stop watch, but employees in the money-order and registry departments are likewise being subjected to such watch timing.

This is particularly true in the money-order divisions of the larger post offices where in recent years labor-saving machines have rapidly been installed. Clerks in these divisions whose duty it is to operate adding machines and recording instruments of various kinds have been "speeded up" to the point where nervous prostration and complete disability have followed.

We are living in an age when we hear much of conservation of the natural resources of our country, and I submit that it is high time that more thought and attention should be given to the greatest of all of our natural resources, namely, the preservation of the strength and life of the great masses of our people who have to toil.

I desire to submit for the record an extract from a memorial to the Postmaster General submitted at the request of the sixteenth annual convention of our association, held at Los Angeles, Cal., from September 6 to 9, inclusive, of this past year, which reads as follows:

EFFICIENCY RECORDS.

The subject of efficiency records received considerable attention from the delegates attending our convention.

It is understood that the department has a commission at work revising the existing efficiency system. There was protest on the part of the delegates attending the convention that too much weight is being given to the element of "speed tests" covering short periods.

We beg to direct the attention of the department to the experience of the Railway Mail Service with the so-called speed tests. The dissatisfaction of the employees because of its introduction in the Railway Mail Service is a matter of history. That the so-called speed system is not practical and does not make for increased efficiency was acknowledged when the Second Assistant Postmaster General, upon the advice and recommendation of the 15 division superintendents of the Railway Mail Service, definitely abandoned the speed tests.

We hope that the experience of the Railway Mail Service will prove sufficient to prevent further attempts to introduce this obnoxious system into our post offices.

The attention of the department is invited to the fact that in a number of post offices local efficiency systems have been put into effect which are wholly and completely at variance with the recognized system which the department promulgated in 1908. In some of these offices where local systems have been adopted they have been based almost entirely upon the taking of speed tests.

We earnestly petition the department to issue an order to all postmasters that these local systems of efficiency must be abandoned pending the time that the department is prepared to promulgate the new system of efficiency upon which it has been at work for some time.

If the practice of establishing local efficiency systems is permitted to grow, chaos in the service must be the natural result.

The attention of the department is invited to the fact that Congress last year adopted amendments to both the Navy and the Army appropriation bills specifically prohibiting the use of a stop watch or other time-measuring device in connection with efficiency systems. It is reasonable to suppose that the will of Congress, as registered in connection with the employees of the Army and Navy Departments, is exactly the same as it would be toward the conditions of employment of post office employees.

I just want to say this, in conclusion, Mr. Chairman and gentlemen of the committee, that I am glad to have had the opportunity to have sat in this committee room and listened to many of the witnesses who have testified heretofore. If I have entertained these opinions before this evidence has been taken, I am all the more strongly intrenched in the belief that I have entertained as the result of the testimony that has been offered here, because I think it has been shown by the questions propounded by the various members of the committee that there is the widest difference of opinion as between the experts as to what does constitute scientific management. We all know what happens to the patient when the doctors disagree, and we have often heard of the patient who was operated upon. We have heard the verdict come from the hospital that the patient died, yes; but the operation had been very successful.

STATEMENT OF MR. THOMAS F. FLAHERTY, SECRETARY AND TREASURER OF THE NATIONAL FEDERATION OF POST OFFICE CLERKS, WASHINGTON, D. C.

Mr. FLAHERTY. I was particularly pleased the other day to hear such authorities as Mr. Henry S. Towne and Mr. Emery, representing, as I believe they do, the sentiments of the business men and the manufacturers generally, say that they were opposed to any abuse of the stop watch. They conceded that the stop watch was an element in the so-called scientific management, in which they were interested, but it was only one of the elements that went to make up that scientifiic management, and they conceded that if it was being abused in any way, particularly in the Government service, that they would stand with the forces who are attempting to have that abuse rectified. I know that we postal employees who are concerned with the enactment of legislation such as is contemplated in the Tavenner bill and the Van Dyke bill, have the unqualified support of the orgazined-labor movement, and if we can also have the support of these elements who have heretofore not shown any inclination to act in this direction, I am quite sure the abuses that the preceding speakers complained of will soon be redressed.

This use of the stop watch in the Postal Service is, I think, as applied to post-office distributors, particularly reprehensible, because they have what is known as an observed test and an unobserved test. That is, the foreman places before the distributor a certain amount of mail, stands beside him with a watch in hand, and tells him, by implication at any rate, to distribute that mail as rapidly as he can, and the worker forthwith obeys. At some subsequent period unknown to the distributor an unobserved test is taken, possibly from some secret vantage point, taken possibly from one of the overhead inspectors' galleries that grace—or, rather, disgrace—every large office in this country. The results of these two tests are shown to the worker, usually to his disadvantage, and he is asked why is it he can distribute so many letters when he is observed and on the unobserved test he falls below that standard. There seems to be the impression abroad in the service that some of these unobserved tests are never taken; that the supervising official arbitrarily comes to the conclusion that the man when he is not being timed is not working up to the time that he was during the five minutes that he was timed, and confronts him with spurious evidence, to the worker's discomfort, of course. It is particularly reprehensible, I believe, to take a test on a man distributing mail, for this reason: Mail is not uniform. One may have an armful of mail, all typewritten, all the letters, or some of them, going to one carrier, going to one block, business letters. Again, under another test, the letters may all be written in longhand; they may be what we call foreign mail, mail going to countries in southern Europe, mail that is hardly legible, mail that can scarcely be deciphered better than at the rate of one or two, possibly, to a minute, and to take a time test of a man from a secret point of vantage far removed, when the watcher could not possibly tell the character of the mail, is, in my judgement, inhumane and unjust.

The National Federation of Post Office Clerks, at its convention in San Francisco, adopted unanimously this resolution:

Whereas a system of timing clerks to determine their speed at distributing mail is in many post offices; and

Whereas this system is unjust and unfair and detrimental to the workers' welfare and the efficiency of the service: Therefore be it

Resolved, That we, the National Federation of Post Office Clerks, in convention assembled, protest against this inhumane method of determining an employee's fitness and capabilities; and be it further

Resolved, That our officers present this protest to the department in the strongest possible manner.

Under date of October 16, 1915, the executive committee of the National Federation of Post Office Clerks transmitted to the Postmaster General this protest:

> We voice our emphatic objection to the use of timing or clock devices to determine the speed at which a postal employee must work. The installation of such a system is a gratuitous affront to the supervisory officials, who have heretofore managed the forces under them sufficiently well to insure the expeditious dispatch of the mails.
>
> A clerk's record on scheme examination, together with the manner in which he performs daily the duties to which he is assigned, should suffice to determine his fitness for promotion or retention in the service. To harass him to maintain abnormal speed by timing his movements is not conducive toward increasing his efficiency. On the contrary, such methods tend to impair efficiency.
>
> We ask the department's advocacy of legislation to prohibit the use of timing devices in ascertaining the amount of work performed, or to be performed, by postal employees.

That protest was embodied in a memorial in October, and yet, to show the committee that this system of timing employees is still in effect, I want to read letters I received from a mail clerk in a first-class office in the Middle West.

Mr. SMITH. Did you get an answer to the protest you filed?

Mr. FLAHERTY. A mere acknowledgement that it had been received and would receive consideration; something to that effect. I will say, Mr. Smith, that this protest against timing devices was but one thing that we called the attention of the department to in this particular memorial. Congressman Van Dyke extended the memorial in his remarks in the Congressional Record of February 19, also in that connection he has introduced a bill, knowing, as he does, the Postal Service, and the need of this legislation, to prohibit specifically in the Postal Service the use of the stop watch.

This letter is addressed to a clerk in the mailing division, and reads as follows:

FEBRUARY 9, 1916.

CLERK, *Mailing Division:*

It is noted that in the January tests you cased 47 pieces per minute unobserved and 61⅕ pieces observed. With the early return of this communication, I would thank you to explain the difference of 14⅕ pieces per minute.

——— ———,
Superintendent of Mails.

The previous speaker has stated that the department, in 1908, established 16 letters per minute as a standard, and yet this particular clerk cased 47 pieces per minute, and still the superintendent of mails was dissatisfied.

This was the reply that the clerk made to this communication:

FEBRUARY 12, 1916.

SUPERINTENDENT OF MAILS.

DEAR SIR: In reply to your communication of February 9, in which you state that the January tests showed that I cased 61⅕ pieces of mail per minute observed and 47 pieces per minute unobserved, and in which you requested me to explain the difference of 14⅛ per minute, I will say that when I threw the 61⅛ letters per minute I was endeavoring, as requested, to see how many I could possibly case on a five-minute test. This is a pace that it would be absurd to think of maintaining for eight hours. I do not know the conditions under which the 47 pieces per minute were cased, but am of the opinion that that is a reasonable rate of speed.

The postmaster then replied, in effect, that men were always expected to put forth their best efforts. So you see the absolute injustice in timing a man under possibly what were favorable conditions for speedy distribution, and then taking a subsequent test under conditions which might be most unfavorable and comparing them to the disadvantage of the worker.

Mr. KEATING. Suppose the postmaster had removed that clerk on that showing, is there any way that the clerk could have protected his interests?

Mr. FLAHERTY. There is no way, Mr. Keating, at the present time. You understand that the term "inefficiency" and "for the good of the service" are very elastic, and if a postmaster determines to "get" a man, as we say, he can come pretty near doing it.

Mr. KEATING. He cauld have dismissed him on the ground that he had fallen down on this particular task?

Mr. FLAHERTY. Very likely he would not have made the charge as specific as that. He might have endeavored to show that he was inefficient in some other way, because it would be too glaring to say that a man, because he did not distribute more than 47 pieces a minute was inefficient.

Mr. SMITH. Could he base his action, or rest on the law that you cited, that a man in 1908 would throw so many pieces?

Mr. FLAHERTY. That was not a law, Mr. Smith. It was a regulation, you understand, and administrations have changed since then, and with the change in administration we always have a change in ideas.

Mr. SMITH. Is the person that throws mail supposed to work there all day, throwing mail eight hours?

Mr. FLAHERTY. A distributer, as a general rule, works all day long; in fact, he works at night for the most part, Mr. Smith. That is one of the features of the Postal Service which possibly you are not acquainted with. The bulk of the mail distribution is done in the late hours of the day, beginning, say, at 5 o'clock and ending at 9 o'clock. This system has grown up in all our large cities: The business houses let their mail accumulate; the stenographers are preparing it and getting it out all day long; and the proprietor or manager, or whoever signs the mail, does so at the end of the day: then the mail is dumped into the mail box around 5 o'clock and taken to the office; and the rush is on.

Mr. SMITH. What occurred to me was that a person throwing mail at that rate, at 47, or put it at 50 in a minute, in a day would throw a lot of mail. It would look as though he would get the mail out of the road.

Mr. FLAHERTY. No; there is never any end to it. This is an endless task. This distribution is going on in the offices all the time—24 hours of the day, 7 days in the week, Sundays, holidays, always—and the men, in order to become expert, in order to become capable of doing this distribution work, must study after office hours on their own time, study these intricate distribution schemes. It is highly specialized work.

Mr. Keating. What salary do they receive?

Mr. Flaharty. There is no distinction in salary, of course, between a distributer and man employed in any other branch of the service. Clerks and carriers are graded under the terms of the classification law of 1907—entrance salary at $800, automatic promotions yearly to $1,100—and Congress has been providing for the promotion of 75 per cent of the men in first-class offices from $1,100 to $1,200. The majority of the men, however, engaged in this particular work are receiving $1,200. There are 18,600 clerks in the $1,200 grade at present. The Post Office appropriation bill that passed the House last month contained a provision to promote 5 per cent of the men from the $1,200 grade to the $1,300 grade, 5 per cent from the $1,300 grade to the $1,400 grade, under a designation known as "special clerk." It is the intent of the department, I believe, to give these "special clerk" titles to men engaged in the distribution of mail; indicating that they place some value on the services of these skilled, expert distributers.

I wish also to read, for the benefit of the committee, something that has taken place in the New York office, in the money-order division. It seems, according to my opinion at any rate, that the speeding up system there has been carried to extremes. The men working on these large tabulating machines, tabulating money orders—New York, of course, does the largest foreign money-order business in the the country—are doing particularly trying, exacting work; it is work that lends itself, unfortunately, to speeding; it lends itself to timing, and the pernicious timing and speeding-up system has gradually crept in there, to the great detriment of the workers. I am informed that three of the men recently have gone insane. Without mentioning the names, sparing, of course, the poor victims the humiliation, possibly of seeing this in the record, I will give you, however, the facts. One clerk was assigned to the money-order department August 5, 1909, resigned May 4, 1915, committed suicide, kills daughter, due to nervousness. Another was assigned to money-order department July 21, 1904, resigned August 9, 1915, a nervous wreck. A third was assigned to the money-order department April 1, 1910, resigned January 14, 1915, mentally defective. Then the writer goes on to mention two others. He says the first one is still in the service, but very nervous and sometimes almost crazy. The second is still in the department, but liable to go to the asylum any day.

> The above men were not always nervous, but since the pushing tactics were used during the past four or five years these men have suddenly changed.

It is the view of the writer, and I have every reason to believe that he is justified in the statement, that these men have lost their reason and become mentally unbalanced due to the pushing or driving tactics in effect in the money-order division there.

In this connection, the reason, I will state, why I, personally, and I think the men in the service to a great extent, fear at the present time a continuation of the speeding-up methods that are in vogue, is the fact that the First Assistant Postmaster General, before the House Post Roads Committee, dilated upon the great advantage of the so-called "two-division" plan, claiming that he is only asking

Congress this year for an increase of 3 per cent for his particular bureau, whereas the normal increase is 6 per cent. He is saving 3 per cent because of the "two-division" plan, and because the forces are more compactly organized. Stripped of all unessentials, this "two-division" plan is simply nothing more than this: Men are compelled to learn the outgoing distribution scheme, the mailing division scheme, and compelled to learn the incoming scheme, always, of course, upon their own time. They are available, therefore, in both ends of the office, to work the incoming and outgoing mail. They are shifted from one end to the other. There is absolutely no chance of relaxation—no chance for rest. The First Assistant Postmaster General attributes the fact that he is saving, in this particular bureau, 3 per cent because of the "two-division" plan.

Scientific management, I heard some of the speakers say in the past few days, contemplates giving the workers a share in the profits to some extent, because it makes them more capable of earning larger salaries. Now, we in the Postal Service have absolutely no such hope, working as we are, having an institution that is, by its very nature, and always will be by its very nature, a governmental monopoly, there is no possible hope of the men doing this distribution, or doing the delivering of mail, or doing any of the other necessary arduous tasks—there is no possible chance for them to share in any bonus, or to share in any profits that may accrue from the conduct of the department. There is no possible chance for them to share in any surplus that their efforts might bring forth. As a matter of fact, and this is interesting, the Postmaster General, in his report to the Sixty-third Congress, said with pride that the Post Office Department was, for the first time since Benjamin Franklin's era, on a self-sustaining basis, and that a surplus of $4,000,000 had accrued. Possibly there are some business institutions making $4,000,000 for the first time, following years and years of steady deficits, that would have been so encouraged that they would have attempted to encourage the employees by proposing some share in these profits. But what did the Postmaster General do? He went to Congress and asked that the eight-hour law be amended to read, instead of 8 in 10, to read 8 in 12, so that the day's work could be spread over 10 hours. He asked that the Sunday rest law be abrogated. A man working Sunday is allowed compensatory time off on one of the following six days; so we are assured relief from toil one day in seven. He asked that the rate of pay for substitutes, and this substitute service is the most—I can scarcely find words to describe it; that is, words that would be suitable in the record. It is a period of precarious living, it is a period that tries men's souls. As Mr. Cantwell said, a great many of the men get out of the service. There is a turning over every 10 years in the service, due to a great extent to the fact that the men get soured on the service during the first years of their substitute period. These substitutes earn, for the most part, they average at any rate, around $30 a month. They are paid at the rate of 35 and 40 cents per hour, and yet the Postmaster General, following a $4,000,000 surplus, asked that their wages be reduced from 35 and 40 cents an hour, to 30 cents. He asked that our promotions, which are now annual, be made biennial, or every second year. Thus you see every bit of remedial legislation that we employees have been able to place upon the statute books during these seven or eight years of hard and incessant work was to be wiped away all at one session, following a year when the department showed, with a great deal of glee, I think, a $4,000,000 surplus.

Mr. SMITH. From what particular branch of the department is the largest part of that received—can you tell?

Mr. FLAHERTY. No; but, Mr. Smith, this is true of the Postal Service. The only revenue-producing portion of the service is the handling of the first-class mail, you understand, the 2-cent letter. There is an enormous deficit in second-class mail matter. The department gets 1 cent a pound revenue, and its costs about 7 or 8 cents to handle it.

Mr. SMITH. What I had particularly in mind was whether there is a considerable saving from the rural carriers.

Mr. FLAHERTY. No; I think the rural service is expensive, but I am fully convinced that it makes this up in a great many other ways.

Mr. SMITH. The chairman stated that there was a saving of some $40,000 in my own district up in Michigan that is represented by Mr. Beakes, I think, by the readjustment, and I wondered if that would go through all the districts.

Mr. FLAHERTY. The department makes no effort to separate into various units the different parts of the service in endeavoring to find out which is the revenue producer. They take this view, that while a city like Chicago will show, and it does show, a $20,000,000 surplus—that is, their revenue is 20,000,000 in excess of their expenditures—still, a letter mailed in Chicago and a stamp bought there and mailed to somewhere in Michigan or elsewhere gets service on a rural route, from which route, of course, none of the revenue is credited and none of the revenue goes. t is difficult to determine just where the revenue or the surplus accrued, but I do know that the men in the service do their share in producing it, and I do know that that was the first year that the eight-hour law went into effect.

Mr. SMITH. Have you any information or have you learned that there is a disposition to eliminate all the postmasters in a county except one, and have all the other offices except that county seat, we will say, for instance, carried on and conducted by the assistant postmaster?

Mr. FLAHERTY. I will say that this legislation which passed the Senate, which was, however, rejected by the House Post Roads Committee previously, would permit the Postmaster General to abolish every office but one in a county and therefore eliminate the postmasters.

Mr. SMITH. Do you know whether that bill is in conference now?

Mr. FLAHERTY. Yes; it is about to go to conference.

Mr. SMITH. That would be a big saving there.

Mr. FLAHERTY. There would be a saving in the salaries of the postmasters, undoubtedly; yes. The previous speaker spoke of the Borah bill, which was introduced in the Senate, and I am pleased to be able to state that it was at my solicitation Senator Borah introduced that bill. I regret, as I think we all regret very much, that he was suddenly taken ill and was unable to be on the Senate floor the morning our bill came up. Previous to that Senator Borah, who had made considerable study of this stop-watch and scientific management, introduced a bill prohibiting its use in the Government service entirely. The time test was then in existence in the Railway

Mail Service, and the railway mail clerks from all over the country sent in petitions to Mr. Borah thanking him for introducing the bill and giving it their unqualified indorsement. Alexander H. Stevens, superintendent of the Railway Mail Service, in a speech at Indianapolis to a body of railway mail clerks, told them in effect that he had the power and the inclination to dismiss from the service any man who would send to Mr. Borah a petition or a request that such legislation be enacted. Mr. Borah took the fight of these railway mail clerks to the floor of the Senate, and in a scathing speech denounced the bureaucratic methods of Mr. Stevens.

It was due to that speech, I believe, rather than to any feelings of the department, that the stop watch was abolished, or the time test was abolished in the Railway Mail Service. The department did not abolish it because of any regard for the health or well-being of the railway mail clerks. If they had that thought, they would have abolished it throughout the service. But the Borah speech, I believe, brought so much publicity and so much odium upon the system, that they thought best, for the time being at least, to eliminate it.

I have no further remarks to make, unless the members of the committee have any questions in mind.

Mr. NOLAN. I do not know whether I got it from information, or whether I read it in a newspaper, but about a year ago I read that they were going to introduce skates in the Chicago post office for all the clerks. Is there any truth in that report?

Mr. FLAHERTY. They have already put skates on the boys who are down in the room where they check wardrobes. The Chicago office is so crowded they had to do away with the lockers downstairs, in order to give more room for the distribution cases. When a man goes to work now in the Chicago office, he goes in and hands his lunch basket, if he has one, and his overcoat, if he has one, to a clerk behind the counter, and the clerk hands him a check in return, and skates down about 30 or 40 feet, and hangs up the luggage. The idea was that he would save time in going to and from the counter and ranging up the clerks' coats and hats.

Mr. KEATING. We thank you very much, Mr. Flaherty, and if there are no further witnesses, the committee will adjourn until Tuesday morning, at 10 o'clock, when it is expected Mr. Frye will be here to testify.

(Whereupon the committee adjourned).

COMMITTEE ON LABOR, HOUSE OF REPRESENTATIVES,
Tuesday, April 4, 1916.

The committee met at 10 o'clock a. m., Hon. Edward Keating presiding.

Mr. KEATING. We will hear first this morning from Mr. Richards.

STATEMENT OF MR. WILLIS B. RICHARDS, 43 WALL STREET, NEW YORK, REPRESENTING GUNN, RICHARDS & CO.

Mr. RICHARDS. Mr. Chairman, I want to start with a word as to how I happened to be here.

In the first place, on December 1, or very shortly after that, I received a circular of the Society to Promote the Science of Management, the headquarters of the president of which are at Hanover, N. H., which reads as follows:

SOCIETY TO PROMOTE THE SCIENCE OF MANAGEMENT,
OFFICE OF THE PRESIDENT,
Hanover, N. H., December 1, 1915.

DEAR SIR:—During the session of 1914–15 strong efforts were made to induce Congress to pass legislation prohibiting time studies and premium payments in Government establishments and in private concerns manufacturing for the government. Their efforts resulted in the passage of the so-called Dietrick amendment to the Army appropriation bill. This legislation was not as effective as its proponents intended, and will undoubtedly be followed during the present session of Congress by stronger efforts to secure more complete prohibitive legislation.

In the belief that such legislation would result in "turning back the wheels of progress," with respect to possible economies of production, not only in Government, but also in many private concerns, a meeting has been called to consider the desirability and means of presenting to Members of Congress and to the public a full, accurate, and impartial explanation of the nature of time, study, and premium payments, and of the situation in Government and other plants where these have been established.

This meeting will be at 2.30 p. m., Friday, December 10, Engineering Societies' Building, room 5, 29 West Thirty-ninth Street, New York City. You are earnestly invited to attend and participate in the deliberations.

This notice is being sent to a widely representative list of names and it is desired that an organization will result, for the purpose of carrying on a campaign, which will be widely representative and not identified with any particular organization.

Very truly, yours,

H. S. PERSON.

Then, shortly after that, I received a letter dated December 20, 1915, from Mr. W. W. Macon, of the Iron Age. This was written after the meeting referred to in the previous letter, of which Mr. Macon was chairman. This letter said:

THE IRON AGE,
New York, December 20, 1915.

Mr. WILLIAM B. RICHARDS,
Gunn, Richards & Co., 43 Wall Street, New York.

DEAR SIR: Will you please send me, by return mail if possible, nominations for members of the committee or ten which the meeting in the Engineering Societies Building on the afternoon of December 1 voted should be appointed to draft a memorial to Congress with respect to antitime-study and other legislation effecting scientific management?

If you made nominations at the time of the meeting, please remake them in the light of the deliberation which you may have given the subject since the meeting.

Yours, very truly,

W. W. MACON, *Engineering Editor.*

Then again, in January, I received a letter dated January 14, 1916, from Mr. Macon, advising me that out of some 70 different nominees for membership on the committee of ten, my name was included, and then at a meeting of the committee of ten afterward, when I was not present, they very kindly suggested that I should raise funds that were necessary to carry out the plans of the committee. This letter of Mr. Richards is as follows:

THE IRON AGE,
New York, January 14, 1916.

Mr. W. B. RICHARDS,
Gunn, Richards & Co., 43 Wall Street, New York City.

DEAR SIR: The canvass I made of those who participated in the informal meeting at the Engineering Societies' Building in New York City on December 10 gave me some 70 different nominees for membership on the committee of ten.

Those who received the greatest number of votes I have constituted the committee, and they are as follows, with Mr. Cooke as chairman:

M. L. Cooke, 401 West Walnut Lane, Philadelphia.
R. A. Feiss, Joseph & Feiss Co., 2149 West Fifty-third Street, Cleveland.
Louis Brandeis, Boston, Mass.
H. P. Kendall, Plimpton Press, Norwood, Mass.
S. E. Thompson, 141 Milk Street, Boston.
W. B. Richards, Gunn, Richards & Co., 43 Wall Street, New York.
Miner Chipman, Harvard Square, Cambridge, Mass.
W. H. Gruel, Otis Elevator Co., Eleventh Avenue and Twenty-sixth Street, New York.
C. B. Going, editor Engineering Magazine, New York.
H. R. Towne, Yale & Towne Manufacturing Co., East Fortieth Street, New York.

When the present committee has agreed in the form and substance of the proposed memorial to Congress, they can then scout around for signers of national position and influence. Certainly it is only with the well wishers of scientific management that we may expect the work to start in getting the movement under way.

The writer wants to take this opportunity to thank you for your cooperation in determining on the personnel of the committee.

Very truly yours,

W. W. Macon.

Now, perhaps you gentlemen know, or perhaps you do not know, that the firm of Gunn, Richards & Co. are production engineers and public accountants, and we have been practicing for quite some time.

The production engineering phase of our organization grew out of the installation of cost systems. Originally we were going to call ourselves cost experts, but gradually with the installation of cost systems in factories we found our work was expanding and included the development of greater efficiency in one branch after another of the factories; and so we finally called ourselves production engineers, which is the science of getting the greatest production possible out of a factory. That is more commonly known now as efficiency and is sometimes called management efficiency.

We have served a good many clients. We have served the Government in Washington and the Government in the Dominion of Canada. I was one of the four advisors on accountancy to the President's Bureau of Economy and Efficiency at the time Mr. Taft had such a bureau and when Dr. Cleveland was at the head of the bureau. He had an advisory committee on accounting subjects and I was one of the four members of that committee and spent considerable time in Washington at that time going over the scheme of accounts in the Government departments.

Now, in reference to the subject of this bill, it seems to me that to legislate against the premium plan and the bonus system of paying labor is to legislate against the opportunity of a working man forming a sort of partnership connection with his work.

We have had a chance to study a good many different forms of remunerating labor, and we know the difficulties of the profit-sharing system and the general problem of welfare work, and to give a man a premium to stimulate his intelligence and generally aid him in the work he can do and reward him for it is a practical partnership relationship that the man can understand, and he can, within reason, control himself.

The idea that that is going to work him beyond endurance, I think, is fallacious. It stimulates him, to be sure. It offers him a reward to greater activity and greater industry, but it does not by any chance monopolize the opportunity of driving a man. You can do it just exactly the same with day wages as you can with any premium plan or bonus system.

You realize that we are not, in a sense, advocates of the Taylor system. We have never practiced it. We would, if any occasion arise under which we thought we could get better results, but the truth is all of those terms had to do with an earlier period.

There is really a science of efficiency now. It is gradually developing into a regular science, and a man practices it just as a man practices law or medicine. You never hear anybody speaking of Mr. Choate's method of practicing law, and yet he has been credited with a good deal of information and knowledge on that subject. We have never seen any bad effects of stimulation by premiums. I do not think we have ever seen an instance of a man breaking down under any effort he might make to get a greater reward than was normal and natural by being paid on a premium basis.

A majority of our clients have a rate-setting department and a planning department, and most of those rates are usually established by men who are not officers of the company, except as you call a superintendent an officer of a company. The foreman and the cost accountant really comprise the planning department. The larger the works the more impersonal the rate-setting relation becomes. In small establishments the proprietor usually makes the rate. and he knows what the rate is, and it has got to be satisfactory to him. When I was down here before there were a good many things that came up, and there was one particularly on the subject of 8 pairs of shoes that I would like to speak about.

While I am going to give you an entirely different illustration in reference to the 8 pairs of shoes than anything I listened to, I do not want you to think that I am in conflict with Mr. Thompson at all. He had a more or less involved operation in his mind that made it impossible for him to be as clear as I would have liked to have seen him.

If, as the problem was stated, the workman was making a complete pair of shoes and could make 8 pairs of shoes a day and was rewarded by being paid $8, and we desired to stimulate him by introducing a premium plan, and under that plan he made 9 pairs of shoes, he would have earned $1.50 for that additional pair of shoes. The ordinary factory would carry 100 per cent overhead. and when a workman got $8 for 8 pairs of shoes the manufacturer would pay $8 for the conduct of his plant, and if he could stimulate that man to make 9 pairs of shoes with the same $8 overhead, and he paid that man $1 for that additional pair of shoes, there would still be $1 profit for the manufacturer, which we would recommend that he split, so that the man would get a reward of $1.50 for the extra pair of shoes he would make if it was perfectly clear there was a $2. result to the company, with no additional overhead.

While that might not be split exactly in half, and while it is subject to modification, if the employer gave the man greater facilities, or any of the thousand and one modifications that might occur, the general principle is as I have stated. So much for the 8 pairs of shoes.

I think it was Mr. London who stated that Gen. Crozier had testified that in one instance in one of the Government arsenals, under the stimulation of the premium plan and the bonus system, a mechanic had increased his output 276 per cent. Assuming that condition would prevail where there were 1,000 workmen, Mr. London pointed out that there would be 600 workmen thrown out of employment. Like every other question that comes up, there are two sides to that.

I do not think Mr. London would advocate the Government employing 1,000 men to do the work that could be done by 400 men simply because it would otherwise throw 600 men out of employment. I do not think he would expect me to get very far in the practice of my profession if that was my recommendation to my clients. I do not think he would consider that 1,000 men who were working on an effort that 400 men should accomplish would go home with a contented feeling at night.

There is nothing that disheartens a man more than to know he is working for an enterprise that is on the downward grade. The other day we examined a plant in Canada which when we had examined it the year before had done $800,000 worth of business, and it lost $800,000 during the year. You can not tell me that the workmen who worked for that company went home with a comfortable, contented, satisfied feeling. You work for a corporation that is prospering, you know your day's work has been intelligently measured, and that you have earned your money, and that your company has profited by your effort, and that you belong to a successful organization—that is one of the greatest satisfactions a laboring man can have. If he can, in addition to that, have the thought and know that some part of the benefit is coming to him, that he is a partner in the achieving of the results, and that partnership relation is fixed, that gives him the greatest sense of satisfaction which a man in the laboring relationship can have.

I do not believe there is anything else I care to say to the committee by way of a general statement.

Mr. Smith. Mr. Richards, I understand from your remarks you are in favor of the stop-watch system, and you are in favor of the bonus system, and also in favor of the premium plan?

Mr. Richards. Mr. Smith, there is no such thing as a stop-watch system. It is necessary to get the costs. Sometimes you can get your costs from the records of the company over a period of six months or a year. If you can not do that, you have to study the operations and find out what the costs are. That is essential in establishing any premium plan or bonus or piecework system.

This bill has a clause that might make it very awkward for a man to get his costs. My own understanding of Gen. Crozier's statement is that they make the studies they do of the operations because if they can not get a man's time they can not make up their estimates, and therefore they would not know how to fix their requests for appropriations. That seems very vital to me. It is the thing we live by, and we strive for always, to get the accurate costs. A man can not do business without knowing accurately his costs, in our judgment.

Mr. Smith. Do you think it tends to increase production by holding a watch on a man?

Mr. RICHARDS. No; it is a minor, unimportant part of the machinery of getting the information. You can put a counter on a press and get information, but a time-study device of some sort is essential in getting the information.

Mr. SMITH. I understood you to say you are not in harmony with the Taylor system?

Mr. RICHARDS. We have never practiced it.

Mr. SMITH. Are we to understand from that that you are not in harmony with it?

Mr. RICHARDS. We would use any part of it we thought fitted to a certain problem.

Mr. SMITH. You know, generally, what it is?

Mr. RICHARDS. Yes, I have met Mr. Taylor.

Mr. SMITH. Would you recommend the Taylor system in a factory?

Mr. RICHARDS. Yes.

Mr. SMITH. Then you are in harmony with it?

Mr. RICHARDS. We do not find it is necessary, but if a problem came along that seemed to render the question of Mr. Taylor's processes a necessary factor, we would go ahead and use it, of course.

Mr. SMITH. Then a stop watch does not aid the workman to increase his production. It is for the benefit of the proprietor or the superintendent.

Mr. RICHARDS. Whoever wants to use the information; yes.

Mr. SMITH. You think it is helpful in obtaining information?

Mr. RICHARDS. Certainly.

Mr. SMITH. I do not know just how long ago Adam Smith published his Wealth of Nations, but it was more than a century ago, was it not?

Mr. RICHARDS. I do not know.

Mr. LONDON. It was in 1776.

Mr. SMITH. I had thought of that book somewhat in connection with the division of labor which has been spoken of here. Is there anything about this stop-watch system that is new as compared with this treatise on the division of labor, as it was published more than a century ago?

Mr. RICHARDS. I can not answer that.

Mr. SMITH. You are, of course, familiary with Adam Smith's Wealth of Nations?"

Mr. RICHARDS. No.

Mr. SMITH. You are in favor of the bonus and premium systems?

Mr. RICHARDS. There is no question about that, Mr. Smith.

Mr. SMITH. What are the merits of the bonus system or the premium plan?

Mr. RICHARDS. The merits of the premium system, as I have expressed it, are that it rewards a man for increasing the effectiveness of his ability and his intelligence. It rewards him for increased expertness, and there is no organization in the world that will not prosper more if the men that work for it are working with it, than if their interest in it is absolutely nil.

Mr. SMITH. What is the difference between the bonus system and the premium plan?

Mr. RICHARDS. The bonus system is based generally on the theory that a certain limit of work is established, generally, a pretty practical test of a good man, and he is paid a certain reward for accomplishing that test. If he falls short of it he gets a very much less reward. In other words, he is supposed to get along on his previous day's wages. If he gets within striking distance of that standard of work and does not quite accomplish it, while the premium plan is based on the theory that a man is getting a day's wages anyway for working in the shop, anything he can do beyond what has been his previous probably accomplishment for that day's wages he is given a premium above his wages for that, and generally it is at a greater pro rata than the work he has been accomplishing in the previous time for his day's wages.

Mr. SMITH. They are both used to stimulate the workmen.

Mr. RICHARDS. Surely.

Mr. SMITH. While the stop watch is used to determine——

Mr. RICHARDS (interposing). To secure the information on which you can stimulate the workmen.

Mr. SMITH. You have been a mechanic?

Mr. RICHARDS. Never.

Mr. SMITH. Have you ever been engaged in agriculture?

Mr. RICHARDS. No.

Mr. SMITH. Do you know how they stimulate their teams when they work them in the field?

Mr. RICHARDS. I do not.

Mr. SMITH. Do you know how they goad teams?

Mr. RICHARDS. Yes; I have been that close to agriculture.

Mr. SMITH. Do you know that sometimes men that are employed by farmers overwork their team?

Mr. RICHARDS. Yes.

Mr. SMITH. And that these men have really to be cautioned about overdoing the work of the teams?

Mr. RICHARDS. Yes.

Mr. SMITH. Would you not think a good, honest workman with ordinary, fair intelligence and ability, would do a sufficient day's work, or a day's work that would satisfy any manufacturer, if the workman was honest in his work?

Mr. RICHARDS. For a day's wages?

Mr. SMITH. For a day's wages, yes.

Mr. RICHARDS. Under the premium plan he still has that privilege.

Mr. SMITH. Do you think the object is a good one to get more out of a man than what he really is capable of doing for an ordinary day's wages?

Mr. RICHARDS. It seems to me it is a shame not to give that man an opportunity to improve his condition, if he can do so. Take a man who is earning $3 a day for 267 days in the year. He gets about $800 a year, which is a pretty fair wage. A certain portion of that goes for rent and a certain additional portion is absolutely essential to provide food for that man's family, and even if a man gets through with that, he is up against the question of providing clothing and other necessities of life, and he does not have more than $100 or $150 for anything that might be in the nature of unnecessary expenses. You increase his earning capacity $7 or $8 a week, and you have increased that factor of benefit to his family, and you know he can put away insurance money, and add to the other factors of protection to his family tremendously. It does not mean simply $6 or $7 a week more, it means three or four times as much money for that man to use for things that are not included in the items of rent, food, and clothes.

Mr. SMITH. When you go into a factory, do you put all the workmen or mechanics on the same plane, so far as wages are concerned? Is it not true that you have different schedules of wages in every factory?

Mr. RICHARDS. Certainly.

Mr. SMITH. Then the good mechanic would be paid so much a day and the poor mechanic so much a day?

Mr. RICHARDS. Yes.

Mr. SMITH. And the poor mechanics do not expect as much as the men who have spent a long time at their trade, and who have become proficient?

Mr. RICHARDS. They are fair. Every employee is generally fair. He recognizes superiority among his fellow workmen.

Mr. SMITH. You recommend the bonus and the premium system in order to suitably reward the workmen?

Mr. RICHARDS. Yes.

Mr. SMITH. And for no other purpose?

Mr. RICHARDS. I do not say for no other purpose. If we can get additional productivity out of a factory under the same overhead, and reward the workmen and the manufacturer, we do that. We have both objects in mind.

Mr. SMITH. Is it necessary to hold a watch on a man to determine whether he is doing a sufficient day's work?

Mr. RICHARDS. No; I hold a watch on a man to find out what the cost of his work is, and what might be a reasonable measure of his ability.

Mr. SMITH. I would like to ask you whether or not that could not be determined after a day's work is done, by the quantity of work a man has accomplished, and during the day he was performing that day's work, could you not tell whether he was industrious and doing a reasonable day's work for the compensation paid to him?

Mr. RICHARDS. Yes; but it would not be as fair to the man as to have it established beforehand what his reward was to be if he did usually well.

Mr. SMITH. I understand from your statement that these systems are all used to determine whether the plant or the factory is succeeding; that is, they are used for the benefit of the manufacturer?

Mr. RICHARDS. You are talking about the stop watch?

Mr. SMITH. I am referring to all of these systems. As I understand you, they are all used to determine the output of the plant, whether a man is doing a sufficient day's work or not. The stopwatch system, the bonus system, and the premium plan are all things that are material to this bill; they are things set up in the bill.

Mr. RICHARDS. You understand my position. If you cut out the stop watch, you involve the premium plan and the bonus system with it, and that is what is vital.

Mr. SMITH. I have no objection, you understand, to paying a man as much as Henry Ford pays his sweepers, $5 a day. I have not any complaint of the workman getting his share of the distribution. But what I would like to know is whether it is necessary to employ these systems to determine whether a man does a fair day's work in the carrying on the work of a factory.

Mr. RICHARDS. It is not necessary to employ a stop watch, no.

Mr. SMITH. Is it necessary to have the bonus system or the premium plan to determine whether or not a man is doing a fair day's work.

Mr. RICHARDS. No.

Mr. SMITH. They are the extra compensation allowed to a skilled workman?

Mr. RICHARDS. They are the extra compensation allowed to any workman who will improve on what he has been doing.

Mr. SMITH. Did you ever hear of a pacemaker?

Mr. RICHARDS. Oh, yes.

Mr. SMITH. Are you in favor of having a pacemaker in a factory?

Mr. RICHARDS. We have never had occasion to use a pacemaker in order to establish a standard.

Mr. LONDON. What would you do with the 600 men who would be thrown out of employment by the adoption of more efficient methods?

Mr. RICHARDS. Mr. London, I do not think there is anything you can do to the average man better than to remove him from a condition where there is no opportunity for promotion, no opportunity for satisfaction or reward. I would let those men find other jobs.

Mr. LONDON. In other words, you would let those 600 men shift for themselves?

Mr. RICHARDS. If I was unfortunate enough to find that many men in one place and they were not necessary there, I would certainly do that.

Mr. LONDON. In the particular case of which you spoke, whereby the introduction of efficiency methods, the productivity of each worker would be increased nearly 300 per cent——

Mr. RICHARDS (interposing). You are stating that; I am not.

Mr. LONDON. Yes. In that particular case, nearly two-thirds of the men would be thrown out of employment. What I am interested in is this. Men speak here in the name of science and in the name of political economy. We want to know whether these political economists or scientists look to the effect which the introduction of new methods will have upon the laboring people. We want to know whether they take that into consideration.

Perhaps I have not made my question clear. I want to know whether the political economists and scientists in working out their methods of efficiency consider what effect these efficiency methods have upon the opportunity to get employment or to retain employment?

Mr. RICHARDS. I am going to answer that question perfectly honestly. I do not suppose we have wasted any thought on that at all.

Mr. LONDON. So that when you speak in the name of science or of political economy you want us to understand that political economy has nothing to do with that problem at all?

Mr. RICHARDS. No; I did not mean to put it that way. It is not necessarily involved. It does not necessarily involve the reduction of workers. It is the increased production in a given plant which we are after. But if it should result in reducing the number of men, I do not want you to think that we start right out and make it our particular business to find places for those men. That is not our occupation.

Mr. London. That is not your concern?

Mr. Richards. No; it is not my concern. That is a true statement.

Mr. London. Is not that really at the bottom of the opposition of the working people to the introduction of more efficient methods of production?

Mr. Richards. I did not know there was any opposition of the working people. We do not find it.

Mr. London. Assume that you are one of the thousand workers who would be affected by the increased productivity of labor. Assume that you knew that 600 out of the 1,000 would lose their jobs.

Mr. Richards. You are assuming that, I am not. I want the increased production of that plant.

Mr. London. I know, but we are proceeding upon the theory just now that in the particular industry to which you refer, and to which Gen. Crozier referred, 600 men out of 1,000 would be in danger of losing their employment.

Mr. Richards. May I answer that in my own way?

Mr. London. Yes.

Mr. Richards. Suppose it was demonstrated—and I think it probably would be—that the relative cost of getting work out of a plant would be so much bettered by reducing the cost so that 400 men could do the work of 1,000 men, as compared to the previous history of the plant, when the plant had the work to keep 1,000 men fairly busy. That is the general operation of it.

Mr. London. I agree that 1,000 men should not be asked to do the work that 400 men can do sufficiently. But I present this question from the practical standpoint. It will affect 1,000 men who earn their livelihood by working. Now a new method is proposed. Those 1,000 men may hold a meeting, and they say, "Here is a new scheme being advocated, and by the adoption of this scheme 600 of us will lose our jobs." They begin to discuss what they should do. They say, "What is our next step?" They may go to an expert, to a consulting engineer, and he says, as you said, "That is not my concern." If it is not your concern, then it is their concern, is it not? It concerns them vitally.

Mr. Richards. Very.

Mr. London. Unless you have a remedy which will supply employment to these 600 men, they would be justified in opposing the adoption of the new scheme, would they not, judging men as they are?

Mr. Richards. Justified in that? I do not think they would be.

Mr. London. But they would be justified in opposing it, would they not?

Mr. Richards. No, I do not think they would be.

Mr. London. In other words, the 600 men should say, "Yes, we will lose our jobs, but it will ultimately promote efficiency in the industry and we will sacrifice ourselves on the altar of efficiency."

Mr. Richards. The justification comes in this way, no man is justified in coming to me and saying "You can get $10 a day in the ordinary occupations, and I want you to work for me for $5 a day." There is no justification in that.

Mr. London. Do you realize that the application of the word science to these individual factories is rather wrong under the circumstances? Science deals with big propositions, propositions affecting society as a whole, and not propositions affecting individual shops?

Mr. Richards. I am willing to concede that. I am not anxious to preserve the term.

Mr. London. You are in favor of any method of efficiency that will promote the productivity of labor, but you do not concern yourself with the question to what extent it will affect a worker, so far as his retaining his employment is concerned?

Mr. Richards. I can not answer that yes or no, because I do not think it is against the workers interest to develop efficiency.

Mr. London. Let us assume that ultimately every method that promotes efficiency——

Mr. Richards (interposing). You have put up a proposition that I do not believe in, as I do not think there are any 1,000 men who are so inefficient that they can have their power to increase their productivity worked over 200 per cent. Gen. Crozier spoke of one instance.

Mr. London. As applied to a particular industry.

Mr. Keating. My impression is that Gen. Crozier had an individual in mind.

Mr. Richards. I think so. That could not be so with 1,000 men. If it were so, it would be a wicked arrangement of Government management. We have been interested in investigating a good many Government activities and activities in other lines.

Mr. London. I want to ask you just one more question. I am asking these questions as a legislator, and as legislators we should take our task seriously. We are not dealing with small matters. We are dealing with big propositions.

In working out your scientific methods of management you seek to adopt plans which will result in using the best tools, the best machines, and the best material, so that efficiency may be promoted to the highest possible extent; is that not true?

Mr. Richards. Yes.

Mr. London. And you take care of every machine, do you not?

Mr. Richards. Certainly.

Mr. London. Do you provide any method of taking care of the human machines engaged in work?

Mr. Richards. You mean do we lay out any plan for retiring labor when it has reached the end of the chapter?

Mr. London. No. Do you start out with the idea of paying enough wages to enable a man to live a man's life?

Mr. Richards. Of course, the wages we start with primarily are based on the law of supply and demand in that location.

Mr. London. Exactly; so that you start out with the law of supply and demand.

Mr. Richards. Yes.

Mr. London. That is the only ethical code you recognize?

Mr. Richards. That is the only practical thing we can do.

Mr. LONDON. The only practical thing?

Mr. RICHARDS. Yes.

Mr. LONDON. If the wage is so low that a man can not live decently on it, you do not pay him more than that, do you?

Mr. RICHARDS. Yes.

Mr. LONDON. You do?

Mr. RICHARDS. I do not mean we do it without any regard to the results we secure, no. But we give him every opportunity to increase that amount by developing his own ability.

Mr. LONDON. You start with the law of supply and demand?

Mr. RICHARDS. Certainly.

Mr. LONDON. You do not start with the law of supply and demand when you deal with an ordinary machine, do you?

Mr. RICHARDS. You mean whether we pay more for a machine than it is worth?

Mr. LONDON. You use a certain machine; you keep that machine in good order. You supply it with a sufficient amount of oil, do you not?

Mr. RICHARDS. Yes. I see what you are getting at.

Mr. LONDON. You supply it with a sufficient amount of oil?

Mr. RICHARDS. Yes.

Mr. LONDON. You do not give it less than the machine needs?

Mr. RICHARDS. No.

Mr. LONDON. You are not applying the law of supply and demand there?

Mr. RICHARDS. No.

Mr. LONDON. But when you deal with the human machine, the question whether the human machine has sufficient oil to continue living does not interest you, does it?

Mr. RICHARDS. Of course, if a man or a group of men showed up at any factory conspicuously in need of sustenance they would get it, undoubtedly, but to ask me whether I would recommend that the manufacturer shall go back and investigate all branches of the family, we do not do that. That is the manufacturer's business.

Mr. LONDON. But do you start out with the idea that you must supply the worker with enough to live on; that is what I want to know?

Mr. RICHARDS. Of course we do.

Mr. LONDON. How do you do that, when you rely upon the law of supply and demand?

Mr. RICHARDS. Because in this country the law of supply and demand does not apply. The trouble is to get the people.

Mr. LONDON. So there are not enough mechanics, according to your idea?

Mr. RICHARDS. I think that is a safe statement of the conditions in this country. Certainly at the present time the need is to develop the capacity of every man.

Mr. LONDON. That is the result of war conditions, is it not?

Mr. RICHARDS. Yes, the war affects it to a great extent.

Mr. LONDON. I am speaking of the condition of your science which existed before the war. Did that condition exist before the war, also?

Mr. RICHARDS. Do you mean do I know of any instances of any men who were working for less money than they could live on?

Mr. London. Was the supply of labor less than the demand for it?

Mr. Richards. Not very much; a little bit.

Mr. London. It was therefore safe to leave the determining of the wage to the law of supply and demand?

Mr. Richards. Of course, you realize you are talking to me, and I am always acting in an advisory capacity, and I can not act the good Samaritan with my client's money.

Mr. London. What I want to know is this: Does the employer who engages a consulting engineer engage him to advise him how to reduce the cost of production?

Mr. Richards. Yes.

Mr. London. Only that and nothing else?

Mr. Richards. No.

Mr. London. Of what does the work of a consulting engineer consist?

Mr. Richards. Increasing the individual capacity of the workmen, and dividing the results.

Mr. London. Dividing the results?

Mr. Richards. Yes, and looking after the manufacturer to see that he gets at least half of the resulting benefit, and give to the workman his share in reward for his increased efficiency and increased productivity.

Mr. London. You divide the result between the employer and the employees?

Mr. Richards. Precisely.

Mr. London. In order to give the worker an increased wage and increased compensation?

Mr. Richards. Precisely.

Mr. London. As long as you are interested in giving the worker an increased wage, you should be interested in knowing what the basic wage is?

Mr. Richards. Certainly.

Mr. London. And your basic wage is determined by the law of supply and demand?

Mr. Richards. Certainly.

Mr. Van Dyke. I notice you said it was determined by the law of supply and demand in the localities?

Mr. Richards. Yes.

Mr. Van Dyke. Are there any cases at any time where an employer will create a larger number of workers in the locality than there is a demand for?

Mr. Richards. You mean intentionally?

Mr. Van Dyke. Intentionally; yes.

Mr. Richards. I have never seen any instance of that.

Mr. Van Dyke. A great number of cases of that kind have been mentioned, and it has been said that it is to the benefit of the employer to bring into the community more than a sufficient number of employees for the work in that locality?

Mr. Richards. There is no doubt in the world that the distribution of information in regard to the payment of $5 a day to the employees of Henry Ford's automobile factory flooded Detroit with labor, I think very much to the injury of labor itself, and certainly to the embarrassment of Mr. Ford's employment department.

Mr. VAN DYKE. But he did not have the ulterior motive of pounding down the price of labor, when he set a minimum wage of $5 a day?

Mr. RICHARDS. He got a large field of applicants from which to select all the men he wanted.

Mr. VAN DYKE. But it was not for the purpose of pounding down the wages?

Mr. RICHARDS. No.

Mr. VAN DYKE. That is the question I desire to ask.

Mr. RICHARDS. No, it was not for that purpose.

Mr. NOLAN. I understood you to say in starting out that scientific management tended to increase the earnings of individuals so that they might have more money to provide a better method of living for their families. Is that right?

Mr. RICHARDS. Yes, sir.

Mr. NOLAN. Does scientific management also contemplate increasing the productivity of the worker to a considerable extent?

Mr. RICHARDS. That is necessary to the increase of his earnings.

Mr. NOLAN. Because as production is increased, and as this system is installed generally it tends to increase the productivity of workers in every line of industry to a great extent, is that not likely to be followed by the laving off of a goodly number of men?

Mr. RICHARDS. Not unless that section of the country was boarded up so that the product could not get out.

Mr. NOLAN. Suppose we take normal times, and not abnormal times, when production is increased to a considerable extent under this system, would that not mean the laying off of a goodly number of workers in industry?

Mr. RICHARDS. It would be very hard to answer that. I would like to say yes, because you evidently expect me to. It fluctuates so that the volume of any one trade rises and falls according to the demand, but I do not think that will be the history here.

Mr. NOLAN. Why do you make provision under your system for greater earnings for a number of men in industry, so that, as you say, they might have a better wage or better salaries in order that they may better take care of their families? Is any thought given to the man who is shoved out of employment, or to his family?

Mr. RICHARDS. To answer the first part of the question—Why do we do this—I say it is to stimulate production, of course. In the operation of the ordinary premium plan we do not necessarily shove out a man who does not earn a premium, but in any line of business there is nothing in the world that will hold a poor man in his job if the employer does not want him.

Mr. NOLAN. I am not particularly asking this question concerning the poor man. In stimulating production you stimulate it largely when you go through a factory with your scientific management?

Mr. RICHARDS. Yes.

Mr. NOLAN. If there is only a certain amount of work to be done in industry, and one individual can accomplish 50 per cent more under scientific management than he could formerly accomplish under the old system, it necessarily means the laying off of a large number of workers?

Mr. RICHARDS. Yes.

Mr. Nolan. You are not concerned about that end of it?

Mr. Richards. No. In our position we are not the employers. We are only advising the employer.

Mr. Nolan. I wanted to bring that out in connection with your statement that you are not expected to play the part of the Good Samaritan with your client's money.

Mr. Richards. There you have it.

Mr. Nolan. You are not giving any consideration to the ultimate effect of scientific management as applied generally to industry in this country—that is, as to what will become of the surplus labor that is put upon the labor market after scientific management is generally applied. That is not a part of your system? You do not give any thought to that?

Mr. Richards. No. We might be employed by a client to give attention to that very thing; but we have not been, and we would not expect to be.

Mr. Nolan. Under scientific management—have you taken up that proposition at all? Have you given any thought to it?

Mr. Richards. We have not had occasion to.

Mr. Nolan. You heard some of the gentlemen who were here opposing this measure, who are efficiency engineers; you heard them testify that it was a case of the survival of the fittest. Do you subscribe to that doctrine?

Mr. Richards. Always, everywhere.

Mr. Nolan. No matter what the ultimate effect might be upon society?

Mr. Richards. I do not think that can be overcome.

Mr. Nolan. You give no consideration to that at all?

Mr. Richards. I would not put it that way.

Mr. Nolan. I understood from your statement a moment ago that as an efficiency engineer you are not called upon to solve that problem.

Mr. Richards. No. I say we would not expect to be employed to solve that problem. A manufacturer might employ us for that purpose, and in that case we would serve him gladly.

Mr. Nolan. In demonstrating scientific management, do you take that up with the employer and discuss it with him?

Mr. Richards. Yes, sir; but there has not been any occasion to do that lately, because labor has been pretty fully employed.

Mr. Nolan. Let us go back a few years. Let us go back to the latter part of 1907, and from that time up until 1913. During that time there was a great period of unemployment in this country, and scientific management was in vogue at that time. You were applying the system to industry at that time, were you not?

Mr. Richards. Certainly.

Mr. Nolan. Then you did have a period when there was a great surplus in the labor market, a great number of unemployed, and the problem at that time was to find employment for those people. Many communities in this country had given thought to that in the way of raising funds to provide work, and in some instances they even fed the men. Did the efficiency engineers give any thought to the welfare of those people at that time?

Mr. Richards. Our office did not.

Mr. NOLAN. Do you know of any concern which demonstrates this system of scientific management that did do that?

Mr. RICHARDS. No; I do not.

Mr. NOLAN. Do you employ time study men?

Mr. RICHARDS. No.

Mr. NOLAN. Do you furnish them to the manufacturers?

Mr. RICHARDS. We have not had occasion to do that.

Mr. NOLAN. Do you use a stop watch in your business?

Mr. RICHARDS. Very little.

Mr. NOLAN. Do you know anything about the training of time studying men who are studying to qualify for future positions of that kind?

Mr. RICHARDS. Yes.

Mr. NOLAN. Will you give the committee an idea of what that training is?

Mr. RICHARDS. It is not very intricate. It is a mere matter of calculating, sometimes through a very short period, the capacity of a machine and the efforts of the man who is working on the machine, and sometimes that is done over quite a little period of time. From that is calculated what might be expected from that group of men, or from a man and his helper working on a machine, and in the absence of any better information, it is a good basis. It is a necessary basis for establishing what might be termed the measure of a man's ability.

Mr. NOLAN. It is quite an important position, is it not, to take time studies and make observations?

Mr. RICHARDS. No. It is generally done by juniors.

Mr. NOLAN. Then you do not consider it necessary to have a high class, practical man to take a stopwatch and make the observations necessary to get the correct time?

Mr. RICHARDS. I should not consider it was necessary.

Mr. NOLAN. In that connection, have you run across, in the application of the stop-watch and in the matter of time studies, any serious mistakes on the part of the man who makes those studies, whom you say need not be a very high class man? Have you run across any instances where such men have made serious mistakes?

Mr. RICHARDS. I do not remember of an instance of that sort. We have done very little of it.

Mr. NOLAN. Do you know whether time-study men generally are trained to make complete studies of the human element involved?

Mr. RICHARDS. Mr. Valentine was on our staff for sometime. Mr. Valentine practically makes a business of that.

Mr. NOLAN. You do not know, Mr. Richards, in any way whether the time study mentioned generally, which the efficiency engineers are making, includes fatigue studies?

Mr. RICHARDS. I do not understand they do. I do not know anything about it, Mr. Nolan. We do not.

Mr. NOLAN. You do not?

Mr. RICHARDS. No.

Mr. NOLAN. Did it ever occur to you that these fatigue studies would be essential to the success of this system eventually?

Mr. RICHARDS. You realize that you are speaking of a system that we are not practicing. We are not, you understand, installing what is known as the Taylor system, but we would not object to it and have not seen any reason to object to it.

Mr. NOLAN. I understood you to make the statement here, Mr. Richards, that you did not consider the stop watch a very important factor in scientific management.

Mr. RICHARDS. We do not.

Mr. NOLAN. You heard the statement of gentlemen here that it was absolutely necessary to have it, did you not?

Mr. RICHARDS. If that is so, I do not agree with them.

Mr. NOLAN. In proceeding along this line of inquiry, Mr. Chairman, I want to be understood as not objecting to individuals or organizations in this country seeking to use what I consider their rights and prerogatives in petitioning Congress, either direct or through other organizations, and circularizing the country. I do not know but that it is a pretty good thing to have that right. I want to ask some questions of Mr. Richards about something that has transpired here in relation to soliciting funds.

Mr. NOLAN. You have testified here that you were selected as one of the committee of ten.

Mr. RICHARDS. Yes, sir.

Mr. NOLAN. And were designated to solicit funds for that committee.

Mr. RICHARDS. Yes, sir.

Mr. NOLAN. Were the men who attended that meeting mostly all efficiency engineers or men that were engaged in the business of scientific management?

Mr. RICHARDS. No.

Mr. NOLAN. Were there any organizations of employers?

Mr. RICHARDS. There were a great many employers.

Mr. NOLAN. Were there any organizations of employers represented?

Mr. RICHARDS. No.

Mr. NOLAN. Have you had charge of the sending out of letters, Mr. Richards, from your office?

Mr. RICHARDS. Yes, sir.

Mr. NOLAN. All of the letters?

Mr. RICHARDS. Yes, sir.

Mr. NOLAN. How many letters requesting funds have been sent out?

Mr. RICHARDS. About 500.

Mr. NOLAN. Did you consider any particular line in sending them out? Did you pick out individuals or were suggestions made to you regarding how they should be sent?

Mr. RICHARDS. We got a list somewhere; I do not remember where it came from.

Mr. NOLAN. Did it come from the National Association of Manufacturers?

Mr. RICHARDS. It did not. I would like to say right here that Mr. Emery is not retained by the committee.

Mr. NOLAN. Are you still sending letters out?

Mr. RICHARDS. We have not sent any more.

Mr. NOLAN. Is all the money turned into your office?

Mr. RICHARDS. Yes.

Mr. NOLAN. How much money have you collected?

Mr. RICHARDS. Three hundred and thirty-five dollars.

Mr. NOLAN. Three hundred and thirty-five dollars?

Mr. Richards. Yes.

Mr. Nolan. I have a letter here that has been incorporated in the record under date of March 21. It is on the letterhead of Glenn Richards & Co., 43 Wall Street, and it is addressed to Mr. John W. Powell, 531 Harvard St. NW., Washington, D. C. Did you dictate that letter?

Mr. Richards. Not each letter.

Mr. Nolan. That is, the form.

Mr. Richards. Yes, sir, the general letter.

Mr. Nolan. I note in the first paragraph on the second page of the letter a statement to the effect that the next step planned by the proponents of this legislation is an act to restrict the Government offices from buying any materials or supplies which have been manufactured by any shop employing modern efficiency methods, and that, following direct legislation, both of these ends may be offered by riders on the appropriation bills, as was done at the last session. Can you tell us, Mr. Richards, what information you have had at your command that prompted you to say that the proponents of this legislation, whoever they may be—I do not know whom you referred to—proposed to restrict the Government of the United States from buying materials or supplies which had been manufactured by any shop employing modern efficiency methods?

Mr. Richards. That was not based on any information we had. That was simply the opinion of the committee.

Mr. Nolan. It states that the next step planned by the proponents of this legislation is an act to restrict——

Mr. Richards (interposing). The language is unfortunate. It was simply the opinion of the committee that that would be the next step.

Mr. Nolan. Did you give any thought to that language when you put it in your letter?

Mr. Richards. Certainly I did. I did not mean to purposely misstate it.

Mr. Nolan. It is rather misleading, isn't it?

Mr. Richards. I realize from the point you make, that it would have been a little more fortunate if a different word had been used.

Mr. Nolan. Have you any information at all that anybody contemplates introducing legislation of that character?

Mr. Richards. No, except that that would be the logical thing, in our judgment.

Mr. Nolan. That is all.

Mr. Keating. Do you wish to ask any questions of Mr. Richards, Mr. Van Dyke?

Mr. Van Dyke. Yes. You understand, Mr. Richards, that I am looking for information relative to the systems that have been used and are being adopted more and more each year in the Government service. As I view this bill, of course, it has to do with Government employees. In asking some other witnesses questions along this line, they have admitted on the stand that even if the bill were passed there is nothing in the provisions of this bill which would prohibit any private employer from going ahead with his system as heretofore.

Mr. Richards. Certainly.

Mr. VAN DYKE. A great deal of stress has been placed upon the methods in that branch of the Government service known as the navy yards and arsenals; in fact, most of our hearings have been along the line of machines and so on. You realize that the Government has a large number of employees who are not employed in those shops, but whom the provisions of this bill would affect. For instance, we have something like 30,000 employees in the arsenals and navy yards, and in one other branch of the service, the postal branch, we have something like 130,000, to state the number conservatively. Do you know anything about the system employed at the present time in the postal branch of the United States?

Mr. RICHARDS. No, personally I do not.

Mr. VAN DYKE. They have a system there which would take in the different branches. The post-office clerks' testimony has been offered to us, where they have described galleries in the post-office building through which the inspectors time the men. They also have another system, of an overseer going up to a man who is working in the letter case and timing him as to the number of letters that he handles in a specified time, holding the watch on him and telling him to speed up; and if he has established a standard, then he is supposed to do as well as that or even better throughout all the rest of his eight hours' work. And every other man in the office is supposed to do as well as he does if he is used as the standard. as is the case in a great number of tests. What do you think of a system of that kind?

Mr. RICHARDS. I think the system is all right, but it can easily be abused.

Mr. VAN DYKE. You understand that the provisions of this bill aim at the abuses entirely of the system of getting the work out of an employee which he is supposed to do for the wage which he receives. That, in my opinion, is the only reason why the provisions of the bill would be of any benefit at all to the employees.

Mr. RICHARDS. You realize that it does not seem to me that that is going to be the operation of the bill.

Mr. VAN DYKE. Absolutely.

Mr. RICHARDS. It is going to prohibit everything.

Mr. VAN DYKE. It is going to prohibit everything except a reasonable time study in the Government shops.

Mr. RICHARDS. You realize, the way the bill is worded, it would be impossible for a man to get the necessary information to even establish a cost system?

Mr. VAN DYKE. That is not my understanding of the bill as it was discussed at the last meeting.

Mr. RICHARDS. That is only my opinion of it.

Mr. VAN DYKE. Yes. Now, we have another system. We will take the Railway Mail Service branch where we have a 100 per cent efficiency night. They take one of the heaviest nights in the week—we will say Friday night—when they have the most mail, and they determine the number of men necessary to complete the distribution of that night's mail on that special run. Then they will arbitrarily fix Saturday night, which is probably a 100 per cent night; but when the mail falls off on Sunday they will place that at 50 or 60 per cent, and reduce the crew proportionately. If connections are missed and there is an overflow, there is a less number of men to take care of, probably, the same volume of mail on Sunday night. But there is no opportunity to get an adequate number of men to handle the mail, consequently the public will suffer. Do you believe that any system of that kind is a good system, not only for the employees, but for the public in general?

Mr. RICHARDS. The way you state it, of course, I would disapprove of it.

Mr. VAN DYKE. Then, also, there is the system which probably more closely resembles your bonus system, which is called the plus and minus system—a system of rewards and demerits. They have one way in which a man may gain 500 plus points for his record, but they have, I think it is, either five or six methods in which a man may receive 500 minus points, and 700 minus points are sufficient for dismissal. Do you believe any system where a man can obtain in only one way 500 merit or plus points, and five or six ways in which he can obtain 500 minus points, is a fair and equitable system?

Mr. RICHARDS. I do not think you ought to ask me that question unless I had a chance to study the system. That is entirely too intricate.

Mr. VAN DYKE. As a general thing, it is the same as putting into effect any kind of system.

Mr. RICHARDS. I do not think the number of points that a man might make would have any bearing upon it. However, I would not want to answer that question without giving it some study.

Mr. VAN DYKE. If a man, as under this system, has to risk his life to obtain 500 points, or to gain 500 points, he has to defend the mail at the risk of his life and, on the other hand, gets 500 minus points for making a false statement to a superior official—do you think that is fair?

Mr. RICHARDS. That is the only way he can get a reward?

Mr. VAN DYKE. That is the only way he can gain 500 points.

Mr. RICHARDS. Upon that statement, it is certainly wrong.

Mr. VAN DYKE. There are other reasons for supporting a bill of this character than simply giving consideration to the merits of the bill as it relates to private employers of the country. We maintain abuses in the Government service that should be rectified.

Mr. RICHARDS. That is no reason, in my mind, why you should support this bill, because this bill does not get at that at all, but it does sweep out of existence something the Government should have.

Mr. VAN DYKE. There is the stop watch or time-measuring system.

Mr. RICHARDS. You absolutely need some time-measuring system to get along.

Mr. VAN DYKE. Every man who has appeared upon the stand has cheerfully admitted that if the bill went into effect it would not affect his factory. Mr. Towne, of the Yale Manufacturing plant, stated that he could go on and continue to do business in the same way, whether this bill was passed or not.

Mr. RICHARDS. This bill does not aim at private property.

Mr. VAN DYKE. That is what I wanted to bring out.

Mr. KEATING. What industries has your firm been "standardizing," if that is the correct term to use? I mean, in what industries has your firm introduced the so-called scientific management?

Mr. **Richards.** Steel plants, automobile factories, paper mills, textile mills, shoes. My imagination stops there. We have had a lot of them.

Mr. **Keating.** Are all shoe factories operating under this system?

Mr. **Richards.** I should not think so.

Mr. **Keating.** You should not think so?

Mr. **Richards.** No.

Mr. **Keating.** What percentage of the shoe factories of the country are under scientific management?

Mr. **Richards.** I should not like to make a guess of greater than 15 per cent.

Mr. **Keating.** Have the factories representing the 15 per cent adopted the same system?

Mr. **Richards.** Oh, no. There are no two alike.

Mr. Keating. Under scientific management there is no definite or well-defined system which must be adopted as a whole?

Mr. **Richards.** No.

Mr. **Keating.** In introducing the system is it the custom for employers to engage engineers who have devoted study to a particular system and get them to go into their plants and standardize and regulate the plant?

Mr. **Richards.** I think a great many manufacturers do much the same thing without any assistance from the outside. I think Mr. Feiss testified here the other day that he had no assistance at all from the outside; yet he has a very highly developed factory.

Mr. **Keating.** Each employer determines for himself whether he wants to introduce a system or not?

Mr. **Richards.** Surely.

Mr. **Keating.** Do you know of any shoe manufacturer who is not operating under scientific management that has an efficient, well-managed factory?

Mr. **Richards.** I do not know.

Mr. **Keating.** Do you know of any shoe factory which is not operating under scientific management which is able to compete with those factories that are under scientific management?

Mr. **Richards.** I said I do not know. I am not at all sure that I can answer differently. You understand that the factories that do not come to us we know very little about. I think there is a factory in St. Louis which I do not believe has ever had an efficiency engineer that is making a very large number of cheap shoes; but I also understand that their loss and gain account is not very satisfactory, and they are not in very good standing; but they do a very large business.

Mr. **Keating.** You would not say to this committee, however, that there were no large shoe factories in this country which were operating without this so-called scientific management?

Mr. **Richards.** I would not say there were none?

Mr. **Keating.** Yes, sir.

Mr. **Richards.** I certainly would not; no, sir.

Mr. **Keating.** There are some business men of recognized standing who have achieved marked success in the business world and have succeeded in conducting his business without scientific management in competition with shops which had adopted scientific management?

Mr. Richards. Yes.

Mr. Keating. You appreciate that the relation between the Government and its employees is somewhat different from the relations between the ordinary employer and his employees?

Mr. Richards. I think I realize that; yes.

Mr. Keating. You can appreciate that the Government has a more direct interest in conserving the human machine than the ordinary employer has?

Mr. Richards. I do not like to say that; no.

Mr. Keating. The ordinary employer has a very direct and vital interest in conserving his ordinary machinery, hasn't he?

Mr. Richards. Yes, sir; certainly.

Mr. Keating. He has his capital invested in that ordinary machinery, hasn't he?

Mr. Richards. Yes, sir; certainly.

Mr. Keating. If one of his human machines were to break down and become incapacitated, he could go out into the market and get another man to replace him without increasing his capital?

Mr. Richards. Surely.

Mr. Keating. But when the Government loses an efficient human machine, it is short one efficient human machine, and the Government's capital is reduced thereby one efficient machine.

Mr. Richards. I can not follow you on that. I can not see that the Government is not in the same position as the private employer when it comes to going out into the labor market and getting a new man.

Mr. Keating. The Government has a direct interest in the well-being of its citizens, their health, their mental and physical strength.

Mr. Richards. Peculiarly in relation to its manufacturing?

Mr. Keating. Oh, no; in relation to its very existence.

Mr. Richards. I will say "yes" to that, of course.

Mr. Keating. There is no dispute about it, Mr. Richards, is there?

Mr. Richards. No.

Mr. Keating. That the very existence of the Government is dependent upon the number of efficient citizens living under that Government?

Mr. Richards. Surely.

Mr. Keating. Therefore, the Government as an employer has, in addition to the interest that the ordinary employer has in increasing the productivity of its employees, the additional interest that it wants citizens who are strong, mentally and physically, for other purposes than that of merely producing shoes, for instance.

Mr. Richards. Yes.

Mr. Keating. You will agree with that proposition, will you, Mr. Richards?

Mr. Richards. Certainly.

Mr. Keating. Then the Government might have a very selfish interest in being something of a Good Samaritan to its employees.

Mr. Richards. Yes, I think so. I think it is, as a rule.

Mr. Keating. Now, Mr. Richards, the introduction of scientific management, as I understood your testimony, involves a very fundamental change in the method of compensation of workmen, doesn't it?

Mr. RICHARDS. Yes, sir.

Mr. KEATING. For centuries, broadly speaking, the working man has been paid on the basis of a day's wages, and your proposition is that he shall be paid what is practically a modification of the piece system; is not that true?

Mr. RICHARDS. Yes, an amplification of the piece system.

Mr. KEATING. And it involves a fundamental, what might almost be called a revolutionary, change in the system of compensating workmen, does it not?

Mr. RICHARDS. No doubt about that.

Mr. KEATING. Then, as an efficiency engineer, and as a business man of experience, don't you feel that as large an employer as the United States Government should give very serious thought to the question before it imposes upon its employees a revolutionary change?

Mr. RICHARDS. No doubt about that.

Mr. KEATING. As a business man, wouldn't you expect your superintendent, if he thought that it would be a good thing to introduce this system into your plant, to come to you first and go over the whole matter with you and satisfy you that this was a good thing?

Mr. RICHARDS. Surely.

Mr. KEATING. You would not approve the conduct of a superintendent who introduced the system first and then came to you and asked you to examine into the merits of the system, would you?

Mr. RICHARDS. Not in a situation like you suppose. If I was the owner of the business, I should expect him, of course, to consult me.

Mr. KEATING. That is the situation as we see it. Here is the United States Government, with hundreds of thousands of employees, and it is proposed to introduce this system without serious consideration by Congress as to the advisability of introducing the system. Don't you think that before the system is introduced Congress, the law-making power, the power that controls the purse strings of the Nation, should have an opportunity to consider the system and determine whether this revolutionary change should be made?

Mr. RICHARDS. Not if you have given that responsibility to somebody else.

Mr. KEATING. Suppose we had not given that responsibility to somebody else?

Mr. RICHARDS. I would say he had exceeded his authority, then.

Mr. BROWNE. What do you know of the Engineering Magazine? What magazine is that?

Mr. RICHARDS. Why, it is a very prominent magazine devoted exclusively to engineering.

Mr. BROWNE. Why I ask you that question is this: I noticed an article in there which took exception to a bill introduced by me dealing with the conditions in the Postal Service of the country. I have, whenever I have been in the committee room here, endeavored to find out just what the different opponents of this bill, which is substantially the same as the one I have just referred to, knew of what I count the abuses in the Postal Service, and I have not yet been able to find anybody who has made a study of the system used.

Mr. RICHARDS. Of course, Price, Waterhouse & Co., and Deloitte, Plender, Griffith & Co., made a study of this system, but they probably did not have a better knowledge than anybody else which would enable them to criticise it.

Mr. BROWNE. That is why I ask you to say whether you had made a study of the system in the Postal Service.

Mr. RICHARDS. I have not.

Mr. BROWNE. This magazine objects strongly to the bill I introduced, and I was wondering whether the editor of that magazine had made a study of it or not.

Mr. RICHARDS. He might have had access to the information gathered by Price, Waterhouse & Co., and Deloitte's or their sources of information. They did not make a report upon the operation of the post office.

Mr. KEATING. Would it be possible for an employer to use the so-called efficiency system in such a way as to oppress his employees?

Mr. RICHARDS. Yes, Mr. Keating, if he could force his employees to work for him. He can not do that; so I must say "no." At least nothing we practice or install is anything more than a temptation to the man to work.

Mr. KEATING. You are speaking of your own system?

Mr. RICHARDS. We have not any system beyond the system that is developed under our advice.

Mr. KEATING. Are there any two engineers who adopt the same system?

Mr. RICHARDS. I doubt it. No two engineers have a chance to work on the same problem. No two lawyers are both on the same side of a case, and if they were, they would not have the same views.

Mr. KEATING. In the matter of compensating an employee for the extra work he may do, this so-called bonus system is merely an effort to stimulate the employee?

Mr. RICHARDS. Surely.

Mr. KEATING. Have any two engineers the same formula for bringing that about?

Mr. RICHARDS. No two engineers of our staff ever have the same formula.

Mr. KEATING. Outside your organization?

Mr. RICHARDS. Outside our organization, no two engineers would follow our mental operations as a rule.

Mr. KEATING. You said, in the matter of the eight shoes, that the workman that made the ninth shoe would receive a dollar and a half.

Mr. RICHARDS. Surely.

Mr. KEATING. Gen. Crozier figured that on an increase of 274 per cent in efficiency the man got 33⅓ per cent increase in salary.

Mr. RICHARDS. That is quite a reflection upon the efficiency of the Government workmen.

Mr. KEATING. It would seem so.

Mr. RICHARDS. I do not think that is an exaggeration. I think that is more or less true.

Mr. KEATING. Would it be fair when the employee's output increases 274 per cent, that his salary should be increased only 33⅓ per cent?

Mr. RICHARDS. If he was so inefficient previously to that time, that would be fair; yes.

Mr. **Keating.** In offering that as an example, Gen. Crozier did not offer it as an example of unusual inefficiency, but as a fair example of results of scientific management.

Mr. **Richards.** That is true; but when you offer a stimulus in the Government employ, you will find that much betterment. That shows that the work previous to that time was performed at a very slack percentage. However, I am talking about something that I don't know anything about. I have never been in an arsenal.

Mr. **Keating.** Do you believe it is possible by offering bonuses to overstimulate the workman so that he will draw unreasonably upon his mental and physical resources?

Mr. **Richards.** It does not ordinarily happen. I can not imagine it would be possible. He can do that when he is in control of his own work, work himself to the point where he can not work any longer.

Mr. **Keating.** If it were shown by actual experience that the offering of bonuses and premiums did cause a workman to so exert himself, in order to earn an extra compensation, that he did injure himself mentally and physically, would you be willing to accept that testimony?

Mr. **Richards.** Yes, of course.

Mr. **Keating.** You would?

Mr. **Richards.** Yes; but I would still feel that it was a very small percentage of risk. You are under the same temptation exactly. You have a reward for your efforts. You work hard; so do I; but there is no obligation on us to work ourselves to death so that it will put us back.

Mr. **Keating.** Is there not a little difference in our case? Your salary for to-day, for instance, does not depend upon the exact amount of work which you perform to-day; neither does mine; neither does Gen. Crozier's. Gen. Crozier's eventual promotion may depend upon the work done by him to-day, to-morrow, and next year, but, Mr. Richards, is not that a little different from the man who worked yesterday for $1.50, but who to-day finds that if he works at top speed for eight hours, he may earn $3?

Mr. **Richards.** You are illustrating the bonus plan there, and I have been thinking along the line of the premium plan. There is a little difference there. The bonus is established upon the plan that a man must reach a certain standard; if he does more, he gets more compensation. But in the premium plan there is not that inequality.

Mr. **Keating.** Most of the witnesses who have appeared here favor the bonus plan as against the premium plan.

Mr. **Richards.** Whether they do or whether they were trying to answer with the bonus plan in mind, I do not know; but I would not advocate it unless the situation was peculiar, in preference to the premium plan. It gives you a little better control of your labor, but it is not essential in getting results.

Mr. **Keating.** You said a certain figure represents a day's pay in the bonus system—say $1.50 a day, for illustration. Then you set another standard, which we will say is $3 a day. If the employee can reach that other standard he gets the $3, but if he falls under it the hundredth part of an inch, all his work has been for naught, and he falls back to $1.50. The object of that system is to keep him constantly struggling to reach that high point, is it not?

Mr. RICHARDS. Yes, sir.

Mr. KEATING. Under the premium system he is paid $1.50 for turning out eight pairs of shoes and a certain fixed sum for turning out each additional pair?

Mr. RICHARDS. Yes, sir.

Mr. KEATING. That is the difference between the two?

Mr. RICHARDS. Yes. sir.

Mr. SMITH. The purposes of the bonus system and of the premium system are to increase the output of the workman, are they not?

Mr. RICHARDS. To stimulate the man to do his best.

Mr. SMITH. To increase the output of the workman?

Mr. RICHARDS. Yes.

Mr. SMITH. If it did not do that, the manufacturer would have no interest in it, would he?

Mr. RICHARDS. I think that is true.

Mr. SMITH. I want to ask if a premium or a bonus is paid to the men for the purpose of requiring them to perform, or inducing them to perform, more than the ordinary day's work, an ordinary and reasonable day's work?

Mr. RICHARDS. No. If it was based on an unfair or abnormal day's work, the system would fall; the employees would lose confidence in it, and the manufacturers would be worse off than before.

Mr. SMITH. In establishing an efficiency system, is it not true that they take their best workmen and try to fix him as a standard for the day's work?

Mr. RICHARDS. Not always; not often, no.

Mr. SMITH. You said something about Mr. Feiss's establishment.

Mr. RICHARDS. Because he testified here the other day.

Mr. SMITH. You heard him state he was in favor of seven hours a day, of labor?

Mr. RICHARDS. I should not be surprised.

Mr. SMITH. Do you recommend that in your system—seven hours for the day's standard?

Mr. RICHARDS. I do not think that a man overworks himself working eight hours. I would rather see it seven than nine.

Mr. SMITH. You are in favor of eight, rather than seven?

Mr. RICHARDS. I would get better results on the eight-hour day.

Mr. SMITH. Your idea is that the workman should have two-thirds of the increase where he performs more than the ordinary day's labor?

Mr. RICHARDS. Left to ourselves, we would divide it, half and half.

Mr. SMITH. Half and half looks very reasonable, I will say that. But if it were true that even at a half-and-half rate, there is no inducement to the manufacturer to extend the employment of his workmen. He comes out just the same in the end as if he paid the ordinary wages.

Mr. RICHARDS. No. I will give you an illustration. Take the 8 pairs of shoes. The factory has overhead for the entire 8 pairs. We will say it runs up to $8; sometimes it runs up over that. If a man is getting $8 and the manufacturer is also paying out $8 more for overhead, and the workman can be stimulated to produce 9 pairs of shoes, for which the manufacturer pays him $9.50 for the 9 pairs of shoes, the cost of the 9 pairs of shoes is $17.50—the compensation of the workman $9.50 and overhead $8. These 9 pairs of shoes at the old rate would have cost $2 apiece; so he has saved 50 cents a day. He has paid $8 for overhead and $9.50 to the workman, and he has produced $17.50 of products. He is 50 cents in pocket. He has that gain, because he has spread that overhead over 9 pairs of shoes instead of over 8.

Mr. SMITH. What do you mean by "overhead?"

Mr. RICHARDS. Why, the cost of cleaning the factory, the cost of the engineers, the cost of fuel burned, the power consumed. The actual overhead is 100 per cent of the money paid for direct labor. That is a very moderate estimate. Of course, the material cuts no figure. It costs the same in each case.

Mr. SMITH. Overhead charges are more when you are working under a premium or bonus system than under the ordinary day's labor, are they?

Mr. RICHARDS. You have an overhead charge either way. In the case I cited there is a saving of a dollar a day in the overhead charge, and the manufacturer gets a part of it, and a part of the benefit goes to the workman. In this case he has divided up with his workman the difference between $18 and $17, which would be the cost if he had paid the workman just exactly $9 for the 9 pairs, because he has spread his overhead over 9 pairs of shoes instead of 8. It is a dollar saved, and he gives the workman the benefit of half of it and takes half for himself.

Mr. SMITH. It looks pretty complicated to me, but I would not dispute it, inasmuch as you have given it great study and so on. But it is true that the manufacturer paid $1.50 for the ninth pair of shoes, taking that same illustration. If he got them made for a dollar, he would be losing, or if he paid two-thirds of the cost of the shoes to the workman and kept one-third for himself it would be to his loss to offer a bonus or premium to have more shoes made for an ordinary day's work.

Mr. RICHARDS. Oh, no; it would not.

Mr. SMITH. I understood you to say that you thought the workman should have two-thirds of the profit.

Mr. RICHARDS. I do not think so. If I said that I did not mean it. It may be necessary, frequently, to stimulate the workmen. Our thought would be half and half.

Mr. SMITH. I quite agree with you on that, Mr. Richards.

Mr. LONDON. You are too frank and candid a witness to let go so soon. In competitive industries, the basic wage is determined by competition, is it not?

Mr. RICHARDS. Yes, sir.

Mr. LONDON. Am I right in assuming that?

Mr. RICHARDS. Surely.

Mr. LONDON. It will be competition which will determine what a fair wage shall be?

Mr. RICHARDS. Yes.

Mr. LONDON. If there is a large supply of men and the supply of men is larger than the demand, then the basic wage will necessarily be small?

Mr. RICHARDS. Yes.

Mr. LONDON. Yes.

Mr. NOLAN. You have attended practically all the hearings of the committee in the last several days?

Mr. RICHARDS. Yes, sir.

Mr. NOLAN. You have heard the testimony of all the men who have appeared here opposing this measure, have you not?

Mr. RICHARDS. I think so.

Mr. NOLAN. Some employers who have installed an efficiency system and their efficiency engineers?

Mr. RICHARDS. Yes.

Mr. NOLAN. There has been a great conflict of testimony on the part of witnesses who have appeared here opposing this measure, regarding scientific management, as it is applied.

Mr. RICHARDS. I think the conflict has been more seeming than real. It is rather an intricate subject. It is pretty hard to make it absolutely clear. Mr. Dunlap who appeared here—the editor of the Engineering Magazine—would have no reason for knowing the operation of these principles. He has not been a student, as we have who have had to face the workmen and meet the difficulties.

Mr. NOLAN. Still he is considered an authority sufficient to——

Mr. RICHARDS (interposing). To edit a magazine.

Mr. NOLAN. To have a large circulation of his magazine, a great portion of which is devoted to efficiency.

Mr. RICHARDS. Surely.

Mr. NOLAN. And would naturally be somewhat familiar with the various systems, after editing a magazine which took such a keen interest in this movement.

Mr. RICHARDS. Yes.

Mr. NOLAN. In writing he must be somewhat familiar with efficiency, from the statements he makes before this committee; isn't that a fact?

Mr. RICHARDS. Yes; I think he thinks he knows it.

Mr. NOLAN. We will take the other gentlemen who have appeared here. Has there not been a difference of opinion among them?

Mr. RICHARDS. I think that Mr. Thom made a very clear and very lucid explanation of his views, and I think Mr. Feiss was very clear, and I did not hear anything that Dr. Kent said that did not sound reasonable. Mr. Thompson had some difficulty in communicating his views of the bonus plan. I know what he had in mind, and it was not so much in conflict with what I have said; but he did have a great difficulty in answering what the ninth pair of shoes would cost.

Mr. NOLAN. If you were sitting on this committee and listening to the testimony of efficiency experts who stated their reasons for opposing this bill, what would you think of the conflict of opinion on the part of efficiency engineers and efficiency experts?

Mr. RICHARDS. I do not want to subscribe to the statement that there has been a conflict of opinion, because I think their opinion, as far as that goes, was stated, to the effect that you could not afford to advocate this legislation; but their illustrations in answering your questions at one time and another show the great difficulty that is experienced everywhere in this world in making the language convey the thought.

Mr. Nolan. You will agree with the proposition that the eight pairs of shoes was a simple proposition, will you not?

Mr. Richards. Mr. Thompson attempted to handle it from the standpoint of the bonus plan. I have attempted to handle it from the standpoint of the premium plan; and really and truly Mr. Dunlap did not know anything about it.

Mr. Nolan. Would you liken the position of the ordinary man under the bonus or premium system to the farmer and the mule? A farmer put some carrots on a stick in front of his mule and the faster the carrots went the faster the mule went, and the mule kept on until he died. Would you liken the average man to the mule?

Mr. Richards. If I did, it would fall of its own weight. You know that can not be true.

Mr. Nolan. Well, we have the testimony of experts who are applying this system and who did not agree at all and who could not answer simple questions.

Mr. Richards. I have answered every question propounded to me by the committee.

Mr. Nolan. You have had the experience of listening to the others.

Mr. Richards. That is a disadvantage, because it was not leaving me anything to say.

Mr. Nolan. I think your explanation of the shoe proposition is the clearest we have had and the fairest we have had.

Mr. Richards. Thank you.

Mr. Nolan. It is the clearest and fairest. It shows a wide difference of opinion. You would pay the man 150 per cent for the ninth pair of shoes, whereas other men testified here, who are here as efficiency experts, that man would be only entitled to from 33⅓ to 50 per cent. How can a system of that kind be satisfactory to the workmen of this country?

Mr. Richards. I gather that I will have you for a client. You will hire me instead of the other fellow. That difference of opinion exists all through the profession.

Mr. Nolan. All right. Suppose we take Thompson, and he gets as a client a large shoe manufacturing company, and you get another large shoe manufacturing company for a client, and that competition exists between them.

Mr. Richards. Yes.

Mr. Nolan. Suppose you apply your system of compensation, bonus or premium, whatever you wish to term it.

Mr. Richards. Yes.

Mr. Nolan. And Mr. Thompson applies his.

Mr. Richards. Yes.

Mr. Nolan. The difference in compensation to the operator for the ninth pair of shoes is a difference of from 50 to 150 per cent. How long is the man who happens to be your client going to permit that compensation to go to his employees?

Mr. Richards. You understand that Mr. Thompson, if he could have made himself clear, would pay the same compensation to that employee provided he reached the standard; but he could not get the language to convey that. We were not so far at variance as it sounded.

Mr. Nolan. Take Dr. Kent, who is clearer, and an acknowledged authority and who has applied a system in his own establishment and, I presume, in other establishments also. Suppose you and Mr. Kent had clients in the shoe business and he applied his system and you applied yours, how long would your client stand up under that competition?

Mr. Richards. What was his testimony?

Mr. Nolan. His contention was 50 per cent.

Mr. Richards. For the ninth pair of shoes?

Mr. Nolan. Yes.

Mr. Richards. My workmen would be more contented than his, I think.

Mr. Nolan. The workman undoubtedly would be more content. That is conceded. But how about the employer that must meet the competition—the employer that you had as a client—as against Mr. Kent's employer or client, if you had to go out on the market and compete in a given field? How long could he carry on the system you installed and pay this additional compensation? In other words, wouldn't it result in that man's having to revise your work?

Mr. Richards. I do not think so, Mr. Nolan. Of course, in any establishments, the premium plan or Dr. Kent's plan either would depend upon its fairness. It is easy enough to revise upward. It would be practically impossible to revise downward and keep the good will and confidence of your men.

Mr. Nolan. I am glad you covered that point. That is just what I wanted to go to—that there would be dissatisfaction on one side or the other. If the one set of men did not get a revision upward there would be dissatisfaction there?

Mr. Richards. Surely.

Mr. Nolan. And if the gentlemen you had as clients undertook to revise downward——

Mr. Richards (interposing). There would be a destruction of confidence.

Mr. Van Dyke. Are you in favor, Mr. Richards, of the piece system?

Mr. Richards. In certain cases; surely.

Mr. Van Dyke. Most of the experts who testified here have been very strongly against the piece system.

Mr. Richards. There is nothing to be said against the piece system, if a problem lends itself to that solution.

Mr. Van Dyke. In another question Mr. Nolan asked you the difference in this ninth pair of shoes in the factory where you gave the $1.50 premium. You would get more efficiency in that factory, would you not, and more men would be after that $1.50, would there not, than where they got only $1 or 75 cents?

Mr. Richards. Surely.

Mr. Van Dyke. And you would make more on the amount of extra efficiency than you would lose in paying that extra amount?

Mr. Richards. Don't get the idea that I am paying any extra amount. I have made a direct gain of 50 cents there. The overhead is just as real as the wages. I have saved $1 and I have divided that into two parts, giving 50 cents to the employee and keeping 50 cents myself. I can keep that up at the same ratio until every man in the factory is working with every bit of efficiency there is in him, thus giving the factory an increased production; and I can do it with a continued saving and with continued benefit to the employee. And that is what I contend is placing the employee in partnership with his job, in partnership with his employer. And, gentlemen, that is not a trifling question; it is a very serious question, and you can not afford to attempt to deprive him of that opportunity, even indirectly. You can not put that in the Government workshops and say that it does not affect commercial business.

Mr. Van Dyke. You can not figure overhead charges in determining just how much that should be, whether it should be $1 or $1.25 or $1.50.

Mr. Richards. Yes. This is subject to all kinds of modification. If the employee had to be given one or more assistants in order to get this efficiency, that should be taken into consideration in establishing the rate. If the facilities are given the man in the beginning and he increases the output, he should be given recognition for that; and as a bald illustration that is perfectly good.

Mr. Nolan. But the fact still remains that Mr. Kent's client would receive the ninth pair of shoes at a cost of 50 cents, while your client would have to pay $1.50.

Mr. Richards. Mr. Kent could not get our rate. The only thing he could do would be to say, "If you will make 11 pairs of shoes, I will give you $12.50," but he could not do it. I stand baldly upon that statement.

Mr. Nolan. He would still have a great many years of study and application to this subject, as he has told the committee.

Mr. Richards. I do not want to reflect upon his testimony. I have listened to Harrington Emerson at a merchants association luncheon, when he would give an illustration of a planer. His illustration was that the tool was cutting one-sixteenth of an inch, taking off one-sixteenth of an inch with each direction of that plane, and that 24 inches of that tool is cutting in air for the 4 inches that he was actually cutting in the metal, whereas the tool was capable of making a three-sixteenth of an inch cut, and that the machine would be the same. You could easily work out from that the position of making him contend that there was seven or eight times the efficiency to be procured. He did not make that statement. That is just an illustration of how a man's mind will work. I am not talking about Mr. Kent; I am talking about Mr. Harrington Emerson.

Mr. Nolan. That is all.

STATEMENT OF HON. CLYDE H. TAVENNER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS.

Mr. Nolan. Congressman Tavenner desires to make a statement.

Mr. Tavenner. I just want to make this statement because I want to be fair to Mr. Richards. I am satisfied that in raising this money neither he nor the committee of ten did anything objectionable. In the last Congress there was an investigation into the business methods of the National Association of Manufacturers, and Mr. Emery of that association seemed to be in charge of the opposition to the bill, and I thought that the revelations coming before that committee justified me in keeping track of what that same association was doing in connection with this bill; and when I read a letter stating that money was being raised to defeat this bill, I though I was justified in giving the facts to the committee. I want to say, in fairness to Mr. Richards, that I do not think that he has done anything in the least objectionable, and I thought it right that the hearings should contain a statement to this effect.

STATEMENT OF MR. CHARLES A. HOWARD, 23 EXCHANGE PLACE, NEW YORK.

Mr. HOWARD. It seems to me the purpose of this bill to protect the workman against expending himself unduly, etc. The premium and bonus systems offer opportunities perhaps for the unscrupulous manufacturer to commit abuses, but the same results could be obtained on plain day work. I have been in a great many factories, and the factory which is driven the hardest of any factory I have ever been in employs no piecework, no bonus system, and no premium plan. It is straight day work. That means a proposition the same as you would have with a bonus proposition without the minimum. They pay a sufficiently high rate of wages, day work, so that everybody in the vicinity wants to work in that plant. They get the pick of the men, naturally. They lay out what they want them to do and it is very excessive. They require them to do that and the man that puts up an argument against it gets paid off.

The bonus system, carried out to its extreme limits, could not drive a man any more than by plain ordinary day work.

The stop watch is used principally as a laboratory instrument. It is seldom used in the plant, standing over the workman, timing him. Its method is more particularly—and its greatest use is—in taking the operation that is to be performed and making a laboratory study of it before setting the time, or determining what will be a reasonable time, in which to do or perform that operation. It is also extremely necessary in deciding upon the method to be used. Take, for instance, the case of planing a plane surface, of iron or steel. There are four ways by which this may be done. It can be done on a planer; it can be done on the milling machine; or it can be done on a surface grinder, or on a shaper. How is the manufacturer going to know which one is the best method to employ without experimenting on it in the laboratory? The method to be used varies with every kind of material and every different shape of article. Unless you can take some time-measuring device and find out the time required, you can not determine the best method.

Mr. SMITH. Could it not be done by seeing how many pieces he had done in a day?

Mr. HOWARD. You are measuring the time, then. Instead of measuring it by whole day's work, you can start a man on a job at, say, 11 o'clock, and determine it from that. Besides, a man in the shop does not always work on the same kind of work a whole day or day after day. He may start in at 11 o'clock on one job; at 11.30, he will have to be transferred to another job, and so on.

Mr. SMITH. The stop watch is eliminated in that case.

Mr. HOWARD. Or other measuring device, if you take it throughout the whole day. But why continue an operation throughout the whole day to determine what may be determined in a comparatively short time? We go into the laboratory and determine in the way I have indicated the method to be used, for instance, on work that will suffice to keep the factory going for six months. The stop watch itself we do not use a great deal. Time-measuring devices are used in the cost of manufacturing a product. A manufacturer who makes a great many products will frequently have an employee who will start in at 9 o'clock in the morning on one job and at 10.30 will be transferred to another job, which he will complete by 11 o'clock and then be transferred to another. In that case, one of the most important time-measuring devices is the time clock, where a man puts a card in and operates the clock and makes a record of the time he starts on a job and the time he finishes it. That is the basis of finding the cost of a particular job of work.

If you prohibit the use of that, as this bill does, it will keep the Ordnance Department from finding out what a rifle barrel costs. There may be several different kinds, and one may cost a little more than another; and there ought to be some method for determining that point. All those things require the use of it. That is an instrument of precision. If we can not use such an instrument of precision, factories must be run on guesswork instead of on knowledge. Every factory is successful pretty well in proportion to what the management know about the business and not to what they guess about it in general.

That is all I have to say, gentlemen.

(Whereupon, at 1 o'clock p. m., a recess was taken until 2 o'clock p. m. of the same day.)

AFTER RECESS.

At the expiration of the recess the hearing was resumed.

STATEMENT OF MR. JOHN P. FREY, EDITOR OF THE INTERNATIONAL MOLDERS JOURNAL, CINCINNATI, OHIO.

The Chairman. Mr. Frey, will you please give your name, occupation, and residence?

Mr. Frey. John P. Frey, editor of the International Molders Journal, Cincinnati, Ohio.

The Chairman. I will state that the system adopted by the committee is this: The witness is permitted to make such a statement as he sees fit, and then the members of the committee ask such questions as may occur to them. Will you proceed, Mr. Frey?

Mr. Frey. Mr. Chairman, it might be well that, in the beginning, I should give the committee an idea of how I came into the possession of the material which I desire to lay before you.

Owing to the interest that was taken in scientific management, the Federal Commission on Industrial Relations desired to have a special investigation made of the subject. They appointed Mr. R. F. Hoxie, Ph. D., of the University of Chicago, to make the investigation. He was to devote one year's time to the work. Part of this work he felt should be the investigation of establishments where scientific management, so-called, had been introduced.

He was of the opinion that, as a university man, he would be unable to get at the actual facts that he came into contact with; that he would be unable to give proper weight to the statements that the employees might make to him, efficiency engineers, or the workmen, and, as he desired his report to be one that would stand unchallenged, he persuaded the Commission on Industrial Relations to supply him with two experts. One to be an expert on management, not particularly scientific management, and the other to be a trades unionist, somewhat familiar with industrial conditions.

He felt that these two men with him, one playing against the other, one preventing the other side from getting away with misstatements, that he would more readily arrive at the actual facts. Mr. Robert G. Valentine, who was associated with Mr. Richards, was finally selected as the management expert. Before he was selected his name was submitted to Mr. Taylor, Mr. Harrington Emerson, Mr. Gantt, and a number of others, with the object of discovering whether he would be satisfactory to them as a representative of management, or whether there were any reasons why he would not be competent to serve in the capacity in which he was wanted.

The CHAIRMAN. Are the gentlemen you have named the leading efficiency engineers?

Mr. FREY. They are leading efficiency engineers, and while I would not want to say that they unanimously indorsed Mr. Valentine, I was given to understand that in no instance had any of the leading efficiency engineers raised any objection to Mr. Valentine's appointment. Under those conditions Mr. Valentine was appointed as management expert.

Similar methods used in the selection of Mr. Valentine, who represented employing management, eventually led to my selection, so that the three of us spent some time in investigating some 35 industrial establishment, in which some feature of scientific management had been introduced and was then in operation. In the investigations that we made of some of those plants it was impossible for the three of us to be there. On several occasions Mr. Valentine was absent; but we kept in continual touch with each other.

I think it might also be well, in regard to giving credence to the proper weight of the facts that I shall lay before you, to state that before Mr. Hoxie made the investigation of these plants, he desired to discover accurately what were the claims of the various efficiency engineers of the scientific management group as to the effect of scientific management upon labor. He also desired to secure an accurate, authoritative statement as to what labor's objections were, and, to this end, read the hearings that were held here in the Capitol, upon scientific management. He read the hearings of the special commissions that were appointed to investigate, such as the one that sat in connection with the Watertown Arsenal. He read the standard books, such as Mr. Taylor's Shop Management, the works of Mr. Gantt, articles by Mr. Cook, Mr. Hathaway, Mr. Kendall, and a number of others. From the hearings and from these books he drew up, approximately, 115 separate and distinct claims made by the scientific management group, as to the benefit of the system to labor. He then drew up a list of the charges which the trades unionists have brought against scientific management, and divided those into about an equal number of separate and distinct charges. I do not mean by that three or four charges upon one subject, but upon different point.

Wanting to be sure that his own lists were accurate he took the lists of the labor claims and of scientific management, and consulted with Mr. Taylor, with Mr. Gantt, and with Mr. Harrington Emerson. There are two Emersons in the firm, and that is why I designate Mr. Harrington. The lists were also taken and shown to a number of others. He had them modify and add to the labor claims of scientific management so that, eventually, he had an authoritative statement from the highest authority in the scientific management group, as to what were the exact claims which scientific management made as to the benefits to labor under scientific management.

He took the charges of labor against scientific management to the Philadelphia convention of the American Federation of Labor, in 1913. He appeared before the executive council of the American Federation, and Mr. Gompers, acting under the authority of the council appointed a committee, at that convention, to go over these labor charges and see whether they were accurate or not. It so happened that I was selected as one of the committee, and was called upon to do much of the work.

I examined the labor charges against scientific management, and when I had done that I insisted that the modified charges should be presented to the officials of the American Federation of Labor.

They were first gone over by Mr. Frank Morrison, the secretary of the Federation, and then they were submitted to Mr. Duncan, the first vice president of the Federation, and some changes were made. Finally, they were submitted to Mr. Gompers, for his revision. So that before the field work was undertaken, Mr. Hoxie had in his possession the authoritative statement of labor's charges against scientific management, and the labor claims of scientific management.

The charges against scientific management, on labor's part, formed on list, and I have a copy with me which the committee may keep, if they desire.

The CHAIRMAN. Without objection it will be inserted in the record, with the testimony of the witness.

TRADE UNION OBJECTIONS TO SCIENTIFIC MANAGEMENT.

TRADE UNION OBJECTIONS DIRECTED AGAINST THE ALLEGED GENERAL CHARACTER AND SPIRIT OF "SCIENTIFIC MANAGEMENT."

Organized labor understands by the term "scientific management" certain well-defined "efficiency systems" which have been recently devised by individuals and small groups under the leadership or in imitation of men like Fred W. Taylor, H. L. Gantt, and Harrington Emerson, by whom this term has been preempted. Organized labor makes a clear distinction between "scientific management" thus defined and science in management. It does not oppose savings of waste and increase of output resulting from improved machinery and truly efficient management. It stands, therefore, definitely committed to science in management, and its objections are directed solely against systems devised by the so-called "scientific management" cult. Against "scientific management" thus defined, the trade unions charge that:

1. "Scientific management" is a device employed for the purpose of increasing production and profits, and tends to eliminate consideration for the character, rights, and welfare of the employees.

(*a*) It libels the character of the workmen.

(*b*) It looks upon the worker as a mere instrument of production.

(*c*) It ordinarily allows the workmen no voice in hiring or discharge, the setting of the task, the determination of the wage rate, or of the general conditions of employment.

(*d*) In spirit and essence so far as labor is concerned it is a cunningly devised speeding-up and sweating system.

(*e*) It is based on the principle of the survival of the fittest.

2. "Scientific management" is opposed to industrial democracy; it is a reversion to industrial autocracy. It forces the workmen to depend upon the employers' conception of fairness and limits the democratic safeguards of the worker.

3. "Scientific management" in its relations to labor is unscientific.

(*a*) It violates the fundamental principles of human nature by ignoring temperament and habits.

(*b*) It concerns itself almost wholly with the problem of production, disregarding in general the vital problem of distribution.

(*c*) It is unscientific in its determination of the task and the wage rate.

(*d*) It does not take all of the elements into consideration, but deals with human beings as it does with inanimate machines.

4. "Scientific management" could be scientific, and, at the same time, be inimical to the welfare of the workers.

5. "Scientific management" does not tend to develop general and long-time economic efficiency.

6. "Scientific management" tends to emphasize quantity of product at the expense of quality.

7. "Scientific management" is incapable of extensive application.

8. "Scientific management" is a theoretical conception already proven a failure in practice.

TRADE UNION OBJECTIONS DIRECTED AGAINST THE EFFECTS OF SCIENTIFIC MANAGEMENT UPON THE CONDITIONS OF WORK AND THE CHARACTER AND WELFARE OF THE WORKERS AND SOCIETY.

The trade unions charge that:

1. "Scientific management" greatly increases the number of "unproductive workers," that is, those engaged in clerical or supervisory work.

2. "Scientific management" tends to gather up and transfer to the management all the traditional knowledge, the judgment, and the skill, and monopolizes the initiative of the worker in connection with the work.

3. "Scientific management" intensifies the modern tendency toward extreme specialization of the work and the task.

(*a*) It splits up the work into a series of minute tasks.

(*b*) It tends to confine the worker to the continuous performance of one of these tasks.

4. "Scientific management" displaces day work and day wages by task work and the piece rate, premium and bonus systems of payment.

5. "Scientific management" is arbitrary in the setting of the task.

(*a*) It tends to set the task on the basis of "stunt" records of the strongest and swiftest workmen without due allowance for the human element or unavoidable delays.

(*b*) It holds that if the task can be performed it is not too great.

(*c*) It shows a constant tendency to increase the intensity and extent of the task.

6. "Scientific management" forces individuals to become "rushers" and "speeders."

7. "Scientific management" tends to displace all but the fastest workers.

8. "Scientific management" greatly intensifies unnecessary managerial dictation and discipline.

9. "Scientific management" has refused to deal with the workers except as individuals.

10. "Scientific management" tends to disregard the physical welfare of the workers.

11. "Scientific management" through these attributes and methods:

(1) Tends to deprive the worker of thought, initiative, sense of achievement, and joy in his work.

(2) Tends to eliminate skilled crafts.

(3) Is destructive of mechanical education and skill.

(4) Tends to deprive the worker of the possibility of learning a trade.

(5) Puts a premium on muscle and speed rather than on brain.

(6) Condemns the worker to a monotonous routine.

(7) Dwarfs and represses the worker intellectually.

(8) Tends to destroy the individuality and inventive genius of the workers.

(9) Stimulates and drives the workers up to the limit of nervous and physical exhaustion, and overfatigues and overstrains them.

(10) Tends to undermine the workers' health.

(11) Shortens the workers' period of industrial activity and earning power.

(12) Increases the danger of industrial accidents.

(13) Tends to destroy the workers' self-respect and self-restraint and leads to habits of spending and intemperance.

(14) Tends to increase the number of punishable shop offenses, and the amount of docking and fining.

(15) Tends to prevent the presentation, and denies the consideration, of grievances.

(16) Constitutes a species of industrial "third degree."

(17) Creates the possibility of systematic blacklisting.

(18) Destroys the independence and manhood of the workers.

(19) Tends to reduce the workers to complete dependence upon the employers, to the condition of industrial serfs.

(20) Introduces the spirit of mutual suspicion and contest among the men, and thus destroys the solidarity and cooperative spirit of the group.

(21) Strikes at the root of workshop ethics.

(22) Is incompatible with and destructive of collective bargaining.

(23) Destroys all the protective rules and standards established by unionism.

(24) Discriminates against union men.

(25) Is incompatible with and destructive of trade unionism.

(26) Displaces the skilled workers and forces them into competition with the less skilled.

(27) Narrows the competitive field and weakens the bargaining strength of the workers through specialization of the task and destruction of craft skill.

(28) Establishes a rigid standard of wages regardless of the progressive increase in the cost of living.

(29) Puts a limit upon the amount of wages which any man can earn.

(30) Often squeezes out of the workers vast overhead charges.

(31) Offers no guaranty against rate cutting.

(32) Is, itself, a systematic rate-cutting device.

(33) Tends to lower the wages of many immediately and permanently.

(34) Violates and indefinitely postpones the application of the fundamental principle of justice in distribution.

(35) Means, in the long run, simply more work for the same or less pay.

(36) Tends to lengthen the hours of labor.

(37) Leads to overproduction and increase of unemployment.

(*a*) In the particular group.

(*b*) In general.

(38) Shortens the tenure of service and lessens the certainty and continuity of employment.

(39) Fails to satisfy the workers under it; but, on the contrary, is regarded by them with extreme distaste.

(40) Increases the antagonism between the workers and their employers.

(41) Intensifies the conditions of industrial unrest.

(42) Offers no guaranty against industrial warfare and is conducive to strikes.

12. Finally, "Scientific management" puts into the hands of employers at large an immense mass of information and methods which may be used unscrupulously to the detriment of the workers and offers no guaranty against the abuse of its professed principles and practices.

TRADE UNION OBJECTIONS TO SPECIFIC FEATURES OF "SCIENTIFIC MANAGEMENT" ARE LEVELED MAINLY AGAINST TIME STUDY AND MOTION STUDY, TASK WORK AND THE PIECE RATE, PREMIUM AND BONUS SYSTEMS OF PAYMENT EMPLOYED BY THE EFFICIENCY EXPERTS.

In this connection, they charge that:

1. Time study and motion study are a direct attack upon the rights, dignity, and welfare of the workers, are destructive of skill and true efficiency, and are a menace to industrial peace.

(*a*) They are unfair in method.

(*b*) They are an evidence of suspicion and a direct question of the honesty and fairness of the workers.

(*c*) They indicate a purpose on the part of the scientific managers and employers to extract the last ounce of energy out of the workers.

(*d*) They ignore habits and traditions of work and tend to minimize the acquired skill of the worker.

(*e*) They split the work up into minute tasks, discover the utmost which the most efficient worker can do as a "stunt" record, and enable the employer to substitute piecework where before day work prevailed, and to substitute various premium and bonus systems for the day wage, and thus:

(1) Increase the modern tendency toward specialization.
(2) Destroy the skilled crafts.
(3) Deprive the worker of training.
(4) Reduce his work to a monotonous routine.
(5) Repress his thought and intelligence.
(6) Reduce him to a semiautomatic attachment to the machine or tool.
(7) Tend to destroy his initiative, ambition, and inventive genius.
(8) Encourage the piecework system.
(9) Encourage the use of various premium and bonus systems.
(10) Enable the employer to deal with the workers as individuals, and thus to substitute individual for collective bargaining.
(11) To pit workman against workman.
(12) To introduce rushers and speeders.
(13) To destroy the basis of workshop ethics.
(14) To destroy unionism and its protective rules and standards.
(15) To speed the worker up beyond the point of physiological and mechanical safety.
(16) To displace the skilled workers and force them into competition with the less skilled.
(17) They thus lower wages and increase unemployment.
(18) They tend to reduce the quality of the work and the output.
(19) They tend to destroy the health and lessen the length of the productive period of the workers.
(20) They increase the drastic character of the discipline.
(21) They increase the possibilities of blacklisting.
(22) They furnish no just or scientific basis for calculating the wage rate.
(23) They increase the points of friction and are thus productive of industrial warfare.

Time and motion study are not necessary to secure true efficiency, as all the data necessary for planning, routing, cost accounting, task setting, and true efficiency in work can be secured without resort to elementary time study and motion analysis and the use of the stop watch.

2. The methods of work and remuneration employed by "Scientific management," its basic wage, its task work, piece rate, premium and bonus systems, are unscientific and unjust in principle, are, in practice, inimical to the welfare of the workers, and are productive of social unrest and industrial warfare.

(*a*) The basic wage of "Scientific management" is simply the customary wage of the region for the class of labor employed. It has absolutely no foundation in science or justice, but is the outcome of the relative competitive strength of workers and employers, and is often estimated at the bare subsistence level or even below.

(*b*) In accepting this wage as the basis of its "scientific" and just methods of remuneration, "Scientific management" conveys the impression that it, the base wage, also is scientific and just, and tends thus to make it permanent at its present level—to fix general wages at the present rates.

(*c*) The premium and bonus rates which "Scientific management" imposes upon this basic wage are both unscientific and unjust to the workers employed.

(1) They are determined, not upon what the worker actually produces, and an attempt to approximate this, but upon a study of how little the worker must be given to insure his utmost effort, and upon how much the employer must be given of the worker's extra product to buy him off from rate cutting.

(2) They usually result in giving the worker less than the regular rate of pay for his extra exertion, and only a portion, and usually the smaller portion of the product which his extra exertion has created. They are usually less advantageous to the worker than straight piecework.

(3) The premium and bonuses are usually arranged so that it is greatly to the advantage of the employer to prevent the workers from equaling or exceeding the task, and securing extra payment therefor.

(4) Therefore, the task is usually set so high that only a few of the strongest and most agile workers are capable of accomplishing it and securing any bonus or premium.

(5) There is a constant tendency to raise the task.

(6) In the most advanced systems, there is a punishment by means of the lowering of regular rates, and the consequent loss of wage for the workers who fail to make the task thus set, as in the case of differential piece rates.

(*d*) The methods of payment employed by "Scientific management" therefore:

(1) Offer no guarantee against rate cutting, but, on the contrary, induce to systematic cutting of the rates.

(2) Result usually in no gain over the customary wage for the most of the workers in the "Scientific management" shops, and sometimes in an actual lowering of the wage below the customary rate.

(3) Result in the degradation of skilled to the condition of less-skilled men.

(*e*) The modes of payment employed by "Scientific management":

(1) Open the way for the employment of rushers and speeders.

(2) Introduce the contest principle among the workers.

(3) Displace harmony and cooperation among the working group by mutual suspicion and controversy.

(4) Make collective bargaining practically impossible.

(5) Prevent the enforcement of the protective standards and rules of unionism.

(6) Destroy the union spirit and organization.

(7) Induce and compel overspeeding and overexertion.

(8) Tend to undermine the health of the workers and bring on premature old age.

(9) Increase the dangers of industrial accidents.

(10) Jeopardize the quality of the product.

(11) Lead to overproduction and unemployment.

(12) Lead to a general lowering of wages and the standard of living among the workers.

The modes of payment employed by "Scientific management" are not necessary to true efficiency.

Mr. FREY. In the labor claims of scientific management there were some differences of opinion because Mr. Taylor, Mr. Emerson, Mr. Gantt, Mr. Parkhurst, Mr. Stimson, and a number of the other efficiency engineers differed on some of the things which they called "fundamentals." So that, in addition to the general labor claims of scientific management, there was one set that was known as the "F. W. Taylor labor claims," one known as the "Emerson labor claims," and one known as the "Gantt labor claims." The substance of the three is about the same. I only have a copy of the labor claims of scientific management, as authorized and O. K'd by Mr. F. W. Taylor, and I shall be glad to leave that with the committee.

The CHAIRMAN. That is by the Mr. Taylor, the founder of the system of scientific management?

Mr. FREY. The same Mr. Taylor; yes, sir.

The CHAIRMAN. Without objection it will be received and inserted in the record.

THE LABOR CLAIMS OF SCIENTIFIC MANAGERS.

[As revised by F. W. Taylor Nov. 11, 1914.]

A. LABOR CLAIMS OF SCIENTIFIC MANAGERS TOUCHING THE GENERAL CHARACTER AND SPIRIT OF SCIENTIFIC MANAGEMENT.

The scientific managers claim that:

1. Scientific management is a system devised by industrial engineers for the purpose of subserving the common interests of employers, workmen, and society at large through the elimination of avoidable wastes, the general improvement of the processes and methods of production, and the just and scientific distribution of the product.

2. Scientific management is based upon the fundamental assumption of harmony of interests between employers and workers, and seeks to establish complete and harmonious cooperation between them.

3. Scientific management attempts to substitute, in the relations between employers and workers, the government of fact and natural law for the rule of force and opinion. It substitutes exact knowledge for guesswork, and seeks to establish a code of natural laws equally binding upon employers and workmen.

4. Scientific management thus seeks to substitute, in the shop discipline, natural law in place of a code of discipline based upon the caprice and arbitrary power of men. No such democracy has ever existed in industry before. Every protest of every workman must be handled by those on the management side, and the right or wrong of the complaint must be settled not by the opinion either of the management or the workmen, but by the great code of laws which has been developed and which must satisfy both sides.

5. Scientific management perforce accepts the modern tendency toward specialization caused by machine production, but seeks to mitigate its possible evil effects upon the workers:

(*a*) By gathering up, systematizing, and systematically transmitting to the workers all the traditional craft knowledge and skill which is being lost and destroyed under current industrial methods.

(*b*) By employing in the shop a corps of competent specialists whose duty it is to instruct and train the workers, and to assist them whenever difficulties arise in connection with the work.

(*c*) By analyzing the operations of industry into their natural parts and assigning to each worker a definte and, by him, accomplishable task.

(*d*) By bringing the workers thus constantly into close, systematic, and helpful touch with the management.

(*e*) By requiring the workers to learn and to perform not one merely but several operations or tasks.

(*f*) By treating each worker as an independent personality.

(*g*) By rewarding the men for helpful suggestions and improvements in the methods of work.

(*h*) By opening up opportunities for the advancement and promotion of the workers.

6. Scientific management seeks to eliminate overstimulation, overspeeding, and nervous and physical exhaustion of the workers:

(*a*) By substituting exact knowledge based upon a careful study of men and machines for guesswork in the setting of the task, and the determination of the hours and other conditions of work.

(*b*) By eliminating thus the need for the employment of pace-makers.

(*c*) By transferring from the workers to the management responsibility for contriving the best methods of work.

(*d*) By removing from each worker responsibility for the work of others, and for the instruction of beginners and helpers.

(*e*) By maintaining the best conditions for performing the work through furnishing the best tools and materials at the proper time and place.

(*f*) By training the workers in the most economical and the easiest methods of performing operations.

(*g*) By standardizing equipment and performance.

(*h*) By instituting rational rest periods and modes of recreation during the working hours.

(*i*) By surrounding the workers with the safest and most sanitary shop environment.

7. Scientific management makes possible the scientific selection of workers, i. e., the mutual adaptation of the task and the worker.

8. Scientific management is thus a practical system of vocational guidance and training, and opens the way for all workers to become "first-class men."

9. Scientific management pays workers rather than positions; it remunerates each man according to his efficiency.

10. Scientific management eliminates systematic soldiering, and thus the hampering and discouraging of the strong and willing by the weak and unwilling.

11. Scientific management, by these methods, seeks to secure more efficiency with less effort; to increase the product which may be shared by employers and laborers; to raise wages while lowering the labor cost, and to place both production and distribution upon a scientific and just basis.

B. LABOR CLAIMS OF SCIENTIFIC MANAGERS CONCERNING THE EFFECTS OF SCIENTIFIC MANAGEMENT UPON THE CONDITIONS OF WORK AND THE CHARACTER AND WELFARE OF THE WORKERS, INDUSTRIALLY AND SOCIALLY.

1. Scientific management develops and promotes a friendly feeling and relationship between the management and the men.

(*a*) The men are not soured, as under the old form of management, by:

(1) The arbitrary bullying of foremen.

(2) The injustice in the method and amount of remuneration.

(3) The lack of proper tools and materials at the proper time and place for doing the work, and other delays and breakdowns over which they have no control.

(4) The absence of proper instructions and guidance.

(5) The necessity of doing work and assuming responsibility properly belonging to the management.

(*b*) They do not spend time criticizing the management.

(*c*) They are satisfied with the conditions of work and pay.

(*d*) They consequently look upon their employers as their best friends.

2. Scientific management promotes friendly feeling and action among the workers in the shop or group.

(*a*) It eliminates the irritation caused by the soldiering and poor work of individuals in the group.

(*b*) It eliminates the ill-feeling caused by parasitism and advancement and remuneration by favoritism.

(*c*) It eliminates the irritation caused by rules which prevent the ambitious and efficient workers from doing their best and being paid accordingly.

(d) It eliminates the suspicion and ill feeling caused by the employment of pacemakers.

(*e*) The men, consequently, work more cheerfully and are more helpful than under the old form of management.

3. Scienfific management stimulates and energizes the workers intellectually:

(*a*) By bringing the workers into constant, close, and helpful touch with the management; by its systematic transmission to the workers of industrial knowledge; by its definite instructions; by assigning to each worker a definite and accomplishable task; by requiring the workers to perform, not one but several operations wherever possible; by rewarding the men for usable suggestions and improvements; by opening up opportunities for advancement or promotion; by instituting rational periods of rest and recreation; by treating each worker as an independent personality; by paying each man according to his efficiency.

(1) Stimulates the thought and ambition of the workers.

(2) Mitigates the monotony incident to modern machine industry.

(3) Develops the workers' sense of personal achievement.

(4) Puts interest, joy, and zest into the work.

(5) Develops and broadens the mechanical skill of the workers.

(6) Stimulates the workers' inventive genius.

(7) Promotes the workers' self-reliance, self-respect, individuality, personality, and dignity.

4. Scientific management guards the workers against overspeeding and exhaustion, nervously and physically.

(*a*) By substituting exact knowledge for guesswork in the setting of the task.

(*b*) By removing the suspicions of the employers that the workers are soldiering.

(*c*) By tending to prevent ignorant bidding and cut-throat competition.

(*d*) By eliminating pacesetters and turning speeders into instructors.

(*e*) By training the men in the easiest methods of work.

(*f*) By careful studies of fatigue and the setting of the task on the basis of a large number of performances by men of different capacities and with due scientific allowance for the human factor and legitimate delays.

5. The so-called speeding up of scientific management is, in the main, a speeding up of machinery, requiring no extra exertion on the part of the workers. The speed of the men is determined by psychological and physical tests and is always set with reference to long-time results. Scientific management challenges anyone to show any overstrained or overworked man in the scientific management shops.

6. Scientific management insures just treatment of individual workers, and lessens the rigors of shop discipline:

(*a*) By keeping records of conduct and exact performance.

(*b*) By substituting the rule of natural law for the arbitrary decisions of foremen, employers, and unions.

(*c*) By giving to the worker in the end equal voice with the employer. Both can only refer to the arbitrament of science and fact.

7. Scientific management increases the skill, efficiency, and productivity of the workers:

(*a*) By the scientific selection of workers so that each worker is set to the highest task for which his physical and intellectual capacity fits him.

(*b*) By providing each worker with the best means and methods of work.

(*c*) By educating and training the workers mechanically as they were never trained before.

(*d*) By training the workers in the easiest and best methods of work.

(*e*) By providing immediate inspection and immediate rewards for increased or improved output.

(*f*) By energizing the workers intellectually.

(*g*) By preventing the more efficient from being held back and demoralized by the inefficient.

(*h*) By raising thus the old-age limit.

8. Scientific management improves the quality of the product:

(*a*) By improved methods of instruction and inspection.

(*b*) By endeavoring to set a task that will show proper relation between quantity and quality.

9. Scientific management tends to shorten the hours of labor.

10. Scientific management improves the conditions of sanitation and safety in the shop.

11. Scientific management, by all these means and methods:

(*a*) Improves the workers' health.

(*b*) Lengthens the workers' lives and period of earning capacity.

12. Scientific management, through its general spirit and its system of wage payment, prevents arbitrary rate cutting and the placing of any arbitrary limit upon the amount which any worker may earn. Under scientific management the rate is never cut without an absolute change in the directions governing the work and the time demanded for doing it.

13. Scientific management raises wages:

(*a*) It directly and immediately increases the wages of the workers in scientific management shops from 30 per cent to 100 per cent.

(*b*) It raises the wages of the unskilled by enabling them to do work formerly done only by skilled men.

(*c*) It raises the wages of skilled workers by opening up opportunities for advancement and promotion.

(*d*) It tends to raise wages generally:

(1) By broadening the field of industrial activity and increasing the efficiency of the workers.

(2) By increasing the total output and thus the general demand for labor.

14. Scientific management tends to prevent the displacement and degredation of skilled labor which is a natural concomitant of developing machine industry:

(*a*) By broadening and improving the mechanical training and skill of the workers.

(*b*) By giving time for adjustment to changed industrial conditions.

(*c*) By opening up new fields of work and extensive opportunities for advancement and promotion.

15. Scientific management tends to increase the employment of labor in the trades where it is installed by cheapening and thus increasing the demand for the product.

16. Scientific management tends to lessen the dangers of general unemployment:

(*a*) By the scientific selection and training of the workers so that each one may find the work for which he is best fitted and thus may become a first-class worker in it.

(*b*) By making possible a more accurate adjustment of supply to demand and so tending to eliminate crises and depression.

(*c*) By increasing production, and so the demand for labor.

17. Scientific management lessens the necessity for a shop reserve of workers and lessens the number of part-time men.

18. Scientific management increases the security and continuity of employment. The term of employment is longer and there is less shifting of employees in scientific management shops than in ordinary shops.

19. Scientific management thus betters the industrial condition of both skilled and unskilled labor.

20. Scientific management makes collective bargaining and trade-unionism unnecessary as a means of protection to the workers.

21. Scientific management, however, welcomes the cooperation of unionism.

22. Scientific management tends to prevent strikes and industrial warfare.

23. Scientific management elevates the workers morally and socially. The workers under scientific management live better and tend to become more temperate and saving.

24. Scientific management democratizes industry; it gives a voice to both parties and substitutes the joint obedience of employers and workers to fact and law for obedience to personal authority.

25. Scientific management tends to remove the causes of social unrest.

C. LABOR CLAIMS OF SCIENTIFIC MANAGERS TOUCHING CERTAIN SPECIFIC FEATURES AND METHODS OF SCIENTIFIC MANAGEMENT.

In this connection, the scientific managers claim that:

1. Time and motion study is the accurate scientific method by which the great mass of laws governing the best and easiest and most productive movements of men are investigated. These laws constitute a great code, which, for the first time in industry, completely controls the acts of the management as well as those of the workmen, and, therefore—

(*a*) Are necessary to secure efficiency and, therefore, justice to the workers and improvements in the wages and conditions of employment—

(1) They substitute exact knowledge for prejudiced opinion and force in determining all the conditions of work and pay. Thus they make possible and are necessary to—

(*a*) The adaptation of the task to the intellectual and physical capacity of the worker.
(*b*) The payment of the workers in exact proportion to their efficiency.
(*c*) The most efficient methods of performing the task.
(*d*) The best conditions of work through the proper routing of the jobs and materials.
(*e*) The elimination of systematic soldiering.
(*f*) The elimination of the suspicions of the employers that the workers are gaining an unfair advantage.

(2) They substitute exact knowledge for ignorance in accounting and bidding. Thus they alone—

(*a*) Make possible exact cost accounting.
(*b*) Make possible the elimination of ignorant and cutthroat competition.

H. K. Hathaway:

(*a*) Make possible accurate cost prediction.
(*b*) The elimination of ignorant competition.

(3) Time and motion study thus—

(*a*) Are essential to the maximum of industrial and commercial efficiency and, therefore, of wages.
(*b*) Eliminate the chief causes of speeding up and the arbitrary alteration of the task.
(*c*) Eliminate the chief causes of rate cutting.

(*b*) Time and motion study, with the use of the stop watch, are not objected to by the workers when their purposes are properly explained and understood by the workers, and when they are used openly and aboveboard by men whose knowledge and ability the workers respect.

2. Task setting and the methods of payment employed by scientific management stimulate and energize the workers intellectually and are essential to maximum efficiency, maximum wages, and justice and fair dealing between employers and workers.

(*a*) Scientific task setting—

(1) Makes possible the mutual adaptation of the man and the work.

(2) Promotes the training of the workman and makes it possible for every man to become "first-class" in some employment.

(3) Puts zest into the work and gives a sense of achievement.

(4) Eliminates the use of pace setters.

(5) Promotes the workers' self-reliance and individuality.

(*b*) The modes of payment employed by scientific management—
(1) Insure pay according to efficiency.
  (*a*) Tend to eliminate soldiering.
  (*b*) Eliminate the need for pace setters.
  (*c*) Turn foremen into instructors.
  (*d*) Increase efficiency and output.
(2) Increase wages.
(3) Tend to guarantee against rate cutting.
(4) Secure justice for each worker.
(5) Promote friendly relations between the employers and workers; prevent suspicion and complaints.
(6) Promote friendly relations among the workers.
(7) Develop the individuality of the workers.

Mr. Frey. I would say that I have here, Mr. Chairman, the field notes which I kept myself. I also have here some of the field notes which Mr. Hoxie kept. I have a report, which I prepared myself for the benefit of the trade-union movement. I have a report, or rather an analysis, that was prepared, relative to the conditions at Watertown Arsenal by Mr. Minor Chapman, an efficiency engineer, and the statements which I make this afternoon will be taken from these authorities.

I will leave a copy of my report on Scientific Management and Labor with the committee, and in doing so, will state that Mr. Hoxie has prepared a much more complete report. I would also say that his report has been revised sentence by sentence, and paragraph by paragraph, by Mr. Valentine and myself. When we had done our work we jointly signed our names to it, without reservation, so that the Hoxie report has the complete indorsement of the expert representing management, and the complete indorsement of the assistant, who represented labor.

The Chairman. Is that report available?

Mr. Frey. It is published by the Appleton Co., but, owing to a lack of funds, the Industrial Commission were not able to publish it. In it you will find a very close and complete analysis of the facts of the bonus system, the premium system, the differential piecework system, and the 37 varieties that have been grafted on to these three fundamental systems.

Mr. Buchanan. How long is it?

Mr. Frey. Oh, it is quite a volume. The report that I have just presented to the committee was prepared for the benefit of the trade-union movement as information, but before I submitted it Mr. Hoxie went over the report with me so as to be certain that I would not make any statements in conflict with the facts, or draw conclusions, or make deductions that were different from his without having good grounds for so doing. And in submitting it I have the authority of Prof. Hoxie back of it; he has O. K'd what I have written.

The material I have here is crowded with facts that have a bearing on different features of scientific management. It would be impossible for me this afternoon to bring all of these out. I shall, however, endeavor to bring out some of the principles of what, to me, appears to be the most important facts for the benefit of the committee; and afterwards I shall be glad to answer such questions as it is possible for me to answer.

One of the features that, in my opinion, ought to be brought before the committee is the experiences at the Watertown Arsenal. But I think it may be better for me to leave the record, which I hold, on that question until after I have covered the more general question of scientific management itself.

I would like to say in the beginning that it is exceedingly difficult to discuss scientific management, so called, before any body of men who have not themselves made a study of it, because of the terms which have been used in connection or with reference to it by the scientific management group, and a lack of knowledge of just what those terms mean. And I would like, therefore, to begin my talk with a few general statements.

In the first place, there is no such thing as "scientific management"—a complete system in itself, which has proved through objective facts that it is scientific. The term "scientific management" is a misnomer. The leading representatives of scientific management have endeavored, since we began to investigate the system, to get away from the term itself, and desire to call it "system of management." For, after all, what really exists are a number of systems, each system containing certain methods, such as the use of the stop watch, the use of the timing system, the routing of work through the planning room, and the paying of some other form of wages than piecework or daywork. Every scientific management engineer has worked out a system of his own, and has modified the original Taylor system very largely.

We found upon careful investigation, that, while it was stated that fatigue studies were made, there is not in existence any studies in fatigue that would enable anyone to discover where the danger point in fatigue began, or when the danger point of fatigue had been reached. No scientist, to say nothing of the scientists of the scientific management group, has yet worked out any tables on fatigue. No one has as yet worked out any data on long-time efficiency. And what I mean by that is, the maximum amount which a man can produce in a lifetime. They have records of what a man can produce in a day, a week, a month, or a year, but there is no such thing as long-time efficiency records, or records which would indicate how much the workman could do in a lifetime. It has been rather a record of what spurters could do in a dash, and not how much a man can do week after week, month after month and year after year, say, in delivering the mail in a city.

We also found that there is no standard of measurement to determine what normal speed should be. That rests entirely upon the judgment of each individual efficiency expert. There is no standard of measurement at all as to what the speed should be.

We also discovered that there is no standard to determine what the hourly wage rates should be, except that they base that upon what they find wages to be locally. In other words, they have evolved no standard, no rule, no method of measurement which would enable them to determine scientifically what the hourly wage rate should be.

We also discovered that they have never been able, apparently, to work out any standard, or any rule, of measurement which would enable them to determine what the comparative value of one class of labor would be, as compared with another class.

To illustrate what I mean by this: to discover what comparison there should be between a switchman's wages and the wages of an engineer shunting cars in a yard, or the engineer running a through express. They have no standard for this at all, and they admit they have none, when they are questioned.

So that the only standard they have in these important matters, the only basic standard they have, is the individual opinion of each separate individual installing these efficiency systems.

I would like, at this time, to say that we found it extremely difficult to place much confidence upon their records of efficiency. A number of efficiency engineers have made statements—perhaps before this committee—and they have in their books and magazine articles, as to the change in efficiency as indicated by an increased output per workman.

We discovered that very many of these increases in output were to be traced more to improved management methods in the way of handling material in the plant, by the introduction of better appliances, as air hoists from floor to floor, traveling cranes, where men formerly lifted by hand; and to be traced not by what labor had done itself, but to better management in the plant.

We also discovered that the records they had, and which they used in order to prove that their system does not necessarily push labor to the limit, were very unreliable.

A number of them have very interesting records, which would indicate that high percentages of the employees—as high as 95 per cent in task and bonus shops—earned the bonus, or, in other words, completed the task within the time set and got the bonus.

That testimony would indicate, superficially at least, that the tasks set were so easy of accomplishment that most of the workers were able to accomplish them. The facts are, that where the task and bonus systems have been introduced, and where foremen are paid a bonus based upon the percentage of the workmen under them, to make their bonuses they become what are termed "bonus stealers." In other words, so much time is allotted to a task. A worker may have from 2 to 3 or from 25 to 30 different jobs handed to him during the day. Before he can begin the new order he must go to the office (or else a boy does that for him, depending upon the system in use), and the order is there stamped by a time clock, showing the moment at which the man began work on that order. When this order is completed that slip goes back to the planning room and is there time-clock stamped, showing the time at which the job was completed, and if the job has been completed within the time set for the job the workman earns his bonus and the foreman his share.

Jobs are set so unevenly under the task and bonus system that a very large number of the workers are unable to earn their bonus on one-half of the jobs, so the workers and the foremen get their heads together—the slips are sent into the office before the job is finished. On one job during the day the worker will fall down lamentably, you see, to balance up the thing, but he will earn bonus so far as the record shows on one-half or two-thirds of the jobs that he in reality had not earned a bonus upon, but the time-clock records that they depend upon so much would indicate that he had. Discovering that condition in more than one plant, we realized that their data as to the percentage of workers who earn bonus was so unreliable that we did not feel justified in using it.

We also discovered this: That in a number of cases, in fact a very large number of cases, scientific management had not been introduced in the plants until the plants had become industrially sick, where the conditions were such that dividends were no longer declared, and it seemed very likely that the sheriff would appear on the scene. So they really came into the plants as doctors; to cure defects; to get rid of the poor management and put an effective management in its place. And the return of prosperity and dividends was not due to the system so much as it was to putting out the incompetent men who occupied high places; changing them, and putting competent men in their stead. I am calling attention to this because it may throw a side light on some of the records which have been submitted.

I might say, too, that we discovered this in a number of plants that are known as "show plants." They are plants that have been written about considerably. Through the system of employment which they have established, they have got picked crews. You had before your committeee a manufacturer, who told you about the accomplishments in his plant. I think I had better not use his name because we pledged ourselves in visiting these plants that we would not use names in our report; that we would not furnish the names to the Commission on Industrial Relations, because we desired to get as much information as we could in those plants, and a number of employers, and some of the efficiency experts, said that if we published the names of the firms and engineers it would probably lead to labor troubles in each plant. But the committee may have no difficulty in knowing the particular firm I am now referring to.

This firm as a part of its system has an employment bureau. They employ a large number of women, the majority of them, in fact, are women. The applicants for work are first submitted to a medical examination. Their eyes are tested; their ears are tested; their heart is tested; their lungs are tested, and their kidneys are tested. As a result of this preliminary investigation the records of the firm show that over 75 per cent of all applicants for work were struck off from their list of possible employees. Of the remainder who went to work they were tested for a while, and if they then failed to come up to the standard they were let go.

So that instead of representing a normal condition for employees, this shop represented a particular crew of picked workers. Looking over them, as I did, I saw that very few of the women were over 30 years of age, and I think the larger number would be around 21 or 22.

This plant had some particularly aggravating methods of speeding up the workers. They had a system which they called a piecework system, but it might also be called a premium system. They paid the workers so much a day, but they must also produce so much an hour, and they must produce so many pieces in an hour. Each group of workers had two sets of wages, for illustration, 28 cents and 35 cents. If the girl failed to produce the task set for her she was reduced from her 35-cent rate to the 28-cent rate.

The CHAIRMAN. You mean 28 cents an hour?

Mr. FREY. Twenty-eight cents an hour. So that if she failed to reach the task set she was penalized by being placed in the lower wage rate.

An additional stimulus also was the erection of iron posts throughout the rooms. These men and women were garment workers, and the shop was an exceedingly well-lighted and airy one. I think it was as fine a shop to work in, so far as air and light are concerned, as I have ever been in. The large floors were open.

The workers were divided into groups of three and four; very seldom were there six. For each group there was an iron standard, and on the top of that standard, about 8 feet high, was a metal card. On that metal card were the number of operations, the number of buttons or collars to sew, that that group must perform, in order to accomplish the task set for them. So that a worker looking around the floor could see what every other worker had to accomplish. From time to time the bosses went around from group to group and counted up the operations they had performed up to that time. The bosses hung up cards showing how much they had accomplished up to that hour, so that by this means each group knew whether they were behind or getting ahead.

That not only kept each group up to the mark, so to speak, of accomplishing their task, but it also created racing between the different groups. And, in my opinion, it was intended to accomplish that purpose, for each little group, trying to show that they were as smart as the other groups, watched what other groups were doing. And when that failed to push them along, the foreman, or gang bosses, or speed bosses, would go up to their group and say, "that group has got us beat, and we can not afford to let them do it." So, as I say, this is used as a form of additional stimulus to keep the workers up to the highest standard.

It is impossible to say what the effect of that kind of labor will have upon the women. The system has only been in operation for three or four years, and the overturn of labor is 25 per cent, so the company stated; and it is therefore impossible for us to judge what the physical effect of that system is to be on those women, for there are no long-time records. We can all draw our own conclusions, however, from that.

In this same plan we had our attention called to one of the ways that scientific management has adopted. The effort of scientific management is to subdivide the work into the smallest specialty possible, the theory being that as you reduce the different operations the worker is to perform upon a piece the more competent and efficient the workers become.

In this plant we went by a little girl who was threading needles, and our attention was called to the fact that the threads which she was threading were all of a standard length. The efficiency engineer had studied the trade of sewing on buttons, and had timed the girls with split-second watches, and with different lengths of thread, for the purpose of discovering what length of thread enabled the girl to sew on the largest number of buttons in a day, and having found out what in their opinion was the proper length, they then had all of these threads cut that length. The girls who were sewing on the buttons (this was a hand operation I am referring to) were not allowed to thread their own needles, because if one girl was taught the trade of threading needles she would become more efficient in threading needles than the girl who was taught the trade of sewing on buttons; and so one girl devoted her time to threading needles with standard lengths of thread, and then the girls sewed on the buttons with the standard lengths of thread.

In another garment-working establishment we took up the matter, and we found a difference in the scientific idea. In this other plant they had carried the scientific study of labor much farther, and having become convinced that the standard length of thread had something to do with the number of buttons that could be sewed on in a day, they reached the conclusion that perhaps the length of the girl's arm had something to do with that, because the girl with short arms would take a quicker, shorter stitch than the girl with long arms; and so they made a study with the number of buttons that girls sewed on per day, according to the length of the arms, and they standardized the length of the girls' arms who were to sew on buttons; and then they carried it one step farther, and they found that the length of the fingers had something to do with it, and they made studies of the length of the fingers of the girls who were to sew on buttons, and they standardized that.

So that the employment department was called upon to hire girls with arms of a certain length and with fingers of a certain length to sew on the buttons with threads of a certain length. They had, however, to abandon that system, because they found after they had standardized the whole thing there were some other factors—nervous coordination, for one thing—that even when they had standardized the whole thing made it possible for some girls to sew on almost twice as many buttons as other girls. I am merely calling your attention to one of the methods which scientific management may adopt in regulating labor.

We found very early in our investigations that not only were the leading exponents of scientific management at odds between themselves as to how time studies should be made and what form of payment should be used, but that they were unanimously of the opinion that there were more fakers installing scientific management than there were fakers in any other profession.

One of the most prominent of the group told us that in his opinion there were five fakers for every genuine efficiency expert in the field, and that organized labor, having come in contact with the fakers' work, were justifiably opposed to what the fakers were doing, but that if we knew what the real experts were doing then we would not have such objection.

It has proved a very profitable field. The employer listens to the story told by the efficiency expert; he sees his labor costs reduced, his production increased, and he puts these men in, sometimes with extraordinary results. In one instance, in Iowa, a very well-known expert, who had been advertised extensively in some of our magazines as teaching anyone how to study character and determine what a worker is adapted for, was paid a salary of $15,000 approximately for one year to install this method of selecting employees. I do not think that that was the sole cause of the firm's going into the hands of receivers, but it was one of the causes; and in discussing this one case with a number of efficiency engineers they pointed out that under this "scientific" method for the selection of employees that it had worked out the reverse of what had been promised, and that in many instances, and particularly in managerial positions, the wrong person had been put on the job.

I would like to quote to you from what one or two of these gentlemen said to us about these fakers. One of the best known efficiency engineers said to us [reading]:

> At the present time there is a great dearth of men who are qualified by experience, training, and temperament to establish in industry the principles of "scientific management" and to develop a proper mechanism for the application of these principles. There are also some of these men who are perfectly sincere and honest in their efforts and do not realize their shortcomings or lack of qualifications. Others have regarded so-called efficiency engineering as a means of earning an easier living and making more money than they would otherwise be able to do in other fields.

This gentleman is very prominent as an efficiency engineer.

Another one equally prominent said to us [reading]:

> One trouble is that there are a large number of fakers installing systems under the guide of "scientific management" and it is because of what they have done that workmen have just cause for complaint?

These are verbatim statements; which I took down myself at the time and had them verified.

Another prominent efficient engineer said [reading]:

> There were more fake engineers in "scientific management" than in any other line.

While I am on that, I might as well quote from a statement made to me by a partner in one of these scientific management installing firms that advertises somewhat extensively. This man had become somewhat confidential with me when he made this statement. This is his statement verbatim:

> All of this talk about scientific management benefiting labor is b. s., but we have to use it for policy's sake. What the employers are after is results, and what——

That is the head of the firm's name, and I do not care to use it—

> are after is the money, and the financial results are the first consideration.

In addition he said that ——— always made the first time studies in a plant, and gave the foreman the first instructions, and that this frequently made trouble, and then that he—the man who was talking to me—was brought in and used as a pacifier or soft-soaper to follow up—

> and to sling the salve, and then later on to follow up the work of rate-making and task-setting.

All of these efficiency engineers complain about the number of fakers who are in the business. As illustrating capacity and fitness of some of the recognized leaders, one of the best-known efficiency engineers, who advertises his business—I mean by that in the magazines, and seeks clients through advertising—was employed by a very large concern in Pennsylvania. We were told by the management that his fee was $100 per day, and that he had 12 of his assistants with him in the plane, who were receiving $75 a week. After the group had been there for a month or so, the general manager wanted to see some results for this work, and the money he was paying out, and he called upon ——— to show him some definite items that he had discovered. He was told that it took a long time to install these systems, as they had to systematize the entire plant, but he thought that he would be able in a day or two to give him evidence of the inefficiency that his experts were uncovering; and a day or two later he went in to the office of the general manager and said:

> We have just discovered one of those things we are continually encountering. Upon the third floor you have two machines side-by-side; they are both made by the same manufacturer, and one of them is only turning out one-half of the product of the other.

The manager said, "I want to see those machines." He was taken up to the third floor and shown the two machines, and the shown record of production from those two machines which the experts had gathered, and it is true they did show that one was turning out about twice as much as the other. The manager told him that that machine on the left was known as a "single-eight," and the machine to the right was known as a "double-eight," and both machines were doing exactly what he had bought them to do; and the result was that this efficiency engineer lost his contract on the spot, and the whole outfit were dropped from the pay roll.

But, I am calling your attention to that as just a little incident to indicate some lack of scientific accuracy which we encountered.

In one very large company having a plant in Pennsylvania and another in Illinois, the president, who was a personal friend of one of the most prominent, if not the most prominent, advocate of scientific management, had introduced a system, and this is what he told us:

> If I had introduced scientific management in the literal way in which ——— interprets it, I would have had a revolution on my hands, and the workmen would have been no good if they had not revolted.

He said that while he was introducing this system ——— found fault with him—this is the verbatim statement—because he did not "God damn" his men enough, and he had told ——— that he would be "God damned" before he would "God damn" his men, and that had he introduced the system as ——— desired to have him do it, the men would not have been any good if they had not revolted.

So far as the scientific management group, and I include in that the names I have already given—Taylor, Emerson, Gantt, Barth, Hathaway, Parkhurst, Simpson, Babcock, and others—lay as much stress upon the necessity of time and motion study as upon anything else. The managers all told us in the plants where we investigated conditions, that the stop watch and the time studies made with the stop watch and the motion studies which resulted were absolutely essential to the labor side of the problem, that time and motion study were one of the keystones of scientific management, so far as the output of labor were concerned. We were under the impression, when we began the investigation, that we would find something of a scientific character about time studies; that is, something that at least seemed to give evidence of scientific accuracy, something that would give definite knowledge as to the time required to perform a task, but we discovered that there was no such thing; that after all the time that was set upon a task was a matter of judgment on the time-study man's part, plus the readings of the time studies, plus the policy of the firm.

I might at this time—and I want to discuss time study for a moment—call attention to this condition, which we discovered, in a plant in Connecticut, not far from the New York line. One of the leading efficiency experts had introduced his system in one department. He informed the firm that it would be necessary for him to set the jobs so that the workers would not be too frightened and so that the results they would secure would lead the workers in the other departments to feel willing to work under scientific management. This gentleman made the usual time studies and set the tasks as a result, and he set them liberally, because under scientific management you can make a task as easy or as hard as you want it—and when you are arguing the matter with the time-study expert the matter is as strong one way as the other—he set the tasks so easy that the employees in that department made a great deal more money than they had ever made before. The management became alarmed at what the efficiency expert had done, and they eventually let the expert go. Then they were threatened with a strike on the part of the employees in this department to retain the system, with the tasks as set because they were making a great deal more money than ever before and working easier.

Not many miles from here, and in the same State, we went to another plant where scientific methods had been installed. There the manager wanted to secure better results as to output and a very rapid reduction in the cost of production. The tasks were set so hard that none of the workers could reach them, or such a small percentage, that this firm was threatened with a strike on its hands, and had to throw out all of the tasks set by this time-study man, and revise the jobs and make them easier.

In a very large plant in Pennsylvania that has been sometimes quoted as an example of the ease under which the workers are employed, where scientific management has been introduced, and where there was a difference in the speed at which the pieceworkers work, and those under scientific management work, we found this to be the condition: That it was a fact that the workers in the department under scientific management, where the task and bonus system had been installed, were working easier than in the other departments where it was piecework. We also found that their earnings were higher than in the other departments where they had piecework, so that in reality, on the surface, under scientific management the workers had less difficult tasks to perform and secured higher earnings. We wanted to discover what lay under this, and we found that in the beginning the efficiency engineer who installed the system had impressed upon the firm that if the system was installed in all of its parts at one fell-swoop that the workers throughout the plant would become alarmed and they would probably have a strike on their hands; that it would be necessary to start this system in easily so that the first group of workers who worked under it would feel satisfied, and then they would be able to go from one department to another.

Previous to this time the girls in all of the departments when first put to work were paid at the rate of 10 cents an hour. He immediately raised the rate to 12 cents an hour, and then he made the tasks so easy that 95 per cent of the girls could perform those tasks within the time set, but the firm has never gone any further with the installing of scientific management, because they discovered it was costing them a great deal more for production in this department under scientific management than it was under the piecework department.

The superintendent who had charge of this department had quite a tale of woe to tell. He said that the same corporation had another plant situated a few miles away and that there the manager was installing the system, but without any of the easing qualities that had surrounded the introduction of it in this one department, that he was not paying a higher hourly wage rate, and that he was setting the tasks so that they were more difficult to perform, and as a result he was showing him up because his cost of production was so much lower, and he said, "If he keeps on doing this, I am going to be run out of my job or I will have to increase the tasks." In other words, the tinsel had been removed and they were getting right down to securing all of the production they could out of the lowest labor cost.

I made the statement that there is nothing scientific about the conclusions reached by scientific management in the setting of tasks, and I would like to give you some reasons for that.

In these time studies that are made every small motion is timed, or an effort is made to time it, and we discovered one firm where they had subdivided the motions to such an extent that they could no longer make time studies because there was no time-study man competent to snap the watch fast enough to catch the subdivisions; they were too brief periods of time. But I have here one of the instruction cards from one plant in which such small divisions of time were made as these, the time being allowed in a hundredth of a minute: Put piece on arbor, 0.15; pick up wrench, 0.03; tighten expansion arbor, 0.15; lay down wrench, 0.02; as you will see a difference of 0.01 of a minute between dropping the monkey wrench and picking it up. But carriage up and set pointer at O, 0.16; put tool in post and set in center of pulley, 0.79; put piece on stud and fasten, 0.24; start machine, 0.02; set tool for turning and throw in feed, 0.18; turn outside diameter, 2-inch run, 1.64; throw out feed, 0.01; face inside and outside diameter of flange, 0.82; stop machine, 0.14.

Instead of making my statement on this subject I would prefer to read an excrept from the Hoxie report on time study and then I will pass to one of the other features. I will say that this is the statement by Mr. Hoxie, indorsed by Mr. Valentine and myself [reading]:

> It is the work of the time-study men which chiefly determines whether efficiency shall be combined with just and humane treatment of the workers, regardful of their present and future welfare.
>
> This being true, says the Hoxie report, the time-study man is, from the standpoint of labor, the central figure in "scientific management"—its vital organ and force. To perform his function properly, to make "scientific management" tolerable to labor, he must be a man exceptional in technical and industrial training, a man with a broad and sympathetic understanding of the workers as well as of the economic and social forces which condition their welfare, a man of unimpeachable judgment, governed by scientific rather than pecuniary considerations, and, withal, he must occupy a high and authoritative position in the management. For if he is to set tasks that will not cause nervous and physical exhaustion, he must not only have an intimate personal knowledge of the work to be done, the special difficulties it involves, the qualities required to do it well, the demand which it makes on strength, skill, ingenuity and nervous force, but he must also be able to recognize and measure nervous disturbance and fatigue and understand and deal wisely with temperament. If he is to set tasks that will always be fair and liberal, he must understand and know how to discount all the effects of current variations in machinery, tools and materials, in human energy and attention. If he is to safeguard the lives and health of the workers and their general economic

and social welfare he must be an expert in matters of sanitation and safety, and have a broad and deep understanding of economic and social problems and forces, and, finally, if he is to make all this knowledge count, he must be able to establish the standards warranted by his study and judicial weighing of men and facts, and to protect these standards against infringement and displacement. All this and more, if the claims of "scientific management" relative to labor are to be generally fulfilled.

But as things actually are, this emphatically is not the type of man who is habitually engaged in time-study work, and who is being drawn into it, nor does the time-study man of the present occupy this exalted position in the hierarchy of "scientific management." The best men in this work are perhaps technically qualified, but so far as the observation of your investigator has gone, the best of them are technicians with little knowledge of the subject of fatigue, little understanding of psychology and temperament, little understanding of the viewpoint and problems of the workers, and almost altogether lacking in knowledge of and interest in the broader economic and social aspects of working-class welfare. The bulk of the time-study men encountered were immature men drawn from the shop or from college. They were expected to get their knowledge and training in all the matters enumerated above through the actual work of the time study and task setting. In the majority of cases encountered it was not considered essential that they should have had any special training in the particular industry. A man who had worked exclusively in the machine shop was considered competent, after a few weeks or months of contact and trial experience, to set tasks in a cotton mill. Sometimes previous industrial experience of any kind was not considered necessary. Analytical ability, good powers of observation, a sense of justice and tact were the chief qualities emphasized as essential for a good time-study man.

We inquired at every plant we visited what were the essential qualities of a good time-study man, and we summed up the results given to us by the efficiency experts and the owners of the plants as follows:

Rarely, if ever, was anything said of technical knowledge concerning fatigue, phychology, sanitation, safety, and in broader problems of industrial and social welfare. Indeed, time study and task setting were almost universally looked upon as primarily mechanical tasks in which the ability to analyze jobs and manipulate figures rather than broad knowledge and sound judgment were regarded as the essential factors. Naturally, therefore, the time-study men were found to be prevailingly of the narrow-minded mechanical type, poorly paid.

We found that the wages paid the time-study men, as a rule, varied from $75 to $125 a month—I am speaking now of the men in the firm's employ, not the experts who installed the scientific management, but the time-study men who stayed on the jobs afterwards—

And occupying the lowest positions in the managerial organization, if they could be said to belong at all to the managerial group. Nor does the situation seem to promise much improvement. For the position and pay accorded to time-study men generally, are such as to preclude the drawing into this work of really competent men in the broader sense.

Mr. LONDON. Mr. Frey, who are these time-study men? Are they former mechanics employed in the factory?

Mr. FREY. Some of them were taken from the shops' crew. Some firms, once the system is installed, are informed that they must use employees in order to get the best results; other firms claim that you must get men from the outside. Some time-study men—I am not speaking of those in the expert's employ, but those in the shops—after the system was installed were college boys. We inquired of one of them what basis he had for reaching the conclusion that certain times from the time studies were the ones to be selected. I may say, for the benefit of the committee, that every time study varies; that is, the worker is rated a little slower this time and a little faster the next time on the same operation or manual movement, and they gather hundreds of thousands of figures and then from this mass of figures they must pick out what will be the times they will accept as the standard for determining the time to be set the job. Each time-study man or almost every time-study man has got a different system of his own. Some throw out all of the maximum times and then take the average times and the minimum times and divide that by two and say, "This shall be the time." Others throw out all of the maximum times and all of the minimum times and from the remainder strike a curve and take the straight line. Others seemingly have no system. This time setter in a large concern where the highest paid girl, when she earned a premium, secured $8.24 a week—the highest paid girl in the plant—had a system for throwing out certain maximum times and minimum times and then using others until from the curve he secured a straight line on the chart he platted out, and we asked why he did this, and he said, "Why, he was following So-and-So's method." "Well, why did So-and-So adopt this rule?" He said, "I don't know; I suppose he knew what he wanted to get, and that is why he worked out that rule." That is the only knowledge this man had of why he had a certain rule for determining what was the time selected in determining how much was a task for somebody and on which they had to earn a living. We found the majority of others equally as ignorant.

While on our inspections we had a time study or two made in every plant. In one plant where we were assured that the workers had no opposition to being stop-watched—that is, having the time-study man back of them with a stop watch keeping the records; we had time-study man make some time studies for us. We were not satisfied with the way he was doing the job, and we had him do it over again. We then called his attention to the fact that he had marked variations in his figures, and he said: "I could have got it closer than this, but it made me nervous to know that you were watching me." [Laughter.]

Aside from a few notable exceptions in the shops and some men who make a general profession of time study in connection with the installation of "scientific management," this theoretically important functionary receives little more than good mechanic's wages and has little voice in determining shop policies. The start is often made at $15 per week. A good time-study man, according to current standards, can be had at from $75 to $100 a month, and $125 per month is rather high rating for experienced men if the statements of scientific managers are to be trusted. In fact, the time-study man, who, if "scientific management" is to make good the most important of its labor claims, should be among the most highly trained and influential officials in the shop, a scientist in viewpoint, a wiser arbiter between employer and workmen, is, in general, a petty functionary, a specialist workman, a sort of clerk, who has no voice in the counsels of the higher officials. There are, of course, exceptions to this general rule, but taking the situation as a whole, the quality of the time-study men actually setting the tasks in "scientific-management" shops and the position which they occupy are such as to preclude any present possibility of the fulfillment of its labor claims.

In addition to the setting of the task and then the stimulating of the worker by the payment of a bonus and the premium systems, they have other methods. I have already called your attention to those standards with the figures on in the garment factory.

One of the gentlemen who came before this committee recently, and who spoke about the interest which he had in the welfare of his employees, has evolved an additional stimulus which at least is unique.

Do you know what the metronome is? It is a little box-like clock arrangement with an arm in front that the piano pupil sets in motion to count time. This gentleman has some operations in his plant where objects are laid on the bench, where they are covered with a spray, and the operator stands up this way [illustrating] and moves an air needle or brush up and down from one row to the other. They have the efficiency method of payment there. That was found insufficient, and so after timing these operators with the time watch until they had the time set, then in front of each one they placed a metronome like this [illustrating], and then as this arm beats backward and forward the worker goes up and down with the tool.

I want to call your attention to a condition that we found, in addition, where scientific management endeavored to stimulate labor. I am quite sure the committee has heard so much about task and bonus that they know just about what it is. The foremen are paid a bonus. They are paid a bonus based upon the percentage of the workers under them who reach their bonus. In another firm that did not have a metronome, but something else which they thought would be as efficient in getting the last possible ounce from the workers, they paid a bonus to all the foremen, based upon the percentage of workers under their charge who earned their bonuses. Then they paid a bonus to the time-study man and task setter, based upon the number of workers who failed to make their bonus. In other words, the time-study man was paid a bonus, based upon the number of workers who failed to make task and earn the bonus, as he made the task so difficult that fewer of the workers could accomplish them his bonus increased. If he set the task more reasonable and a larger number of the workers completed their task before the time set, he lost his bonus, so that the task setter was pitted against the foreman and the amount of his pay envelope depending upon his setting the task so high that but few of the workers could reach it, the foreman received his bonus, based upon the number of workers who earned their bonus, so that the time-study man and the foreman were continually fighting each other over the question of the jobs, and naturally the foreman was using every possible means within his power to drive the workers under him to earn their bonus, because extra money in pay envelope for him depended upon his doing so. So that task and bonus or premium or the differential piece system has not been entirely satisfactory to some employers in determining the output that a human being is capable of producing every day.

Mr. London. Will you allow an interruption here?

Mr. Frey. All you want.

Mr. London. Would an employer gain by setting the task so high that only a small percentage of the employees would come up to it?

Mr. Frey. I could not answer that, because I am not an employer, any more than we could answer a good many questions like this, for instance: Why is it that employers used to force the employees to work from sunrise to sunset? Why did they clean out the orphanages and other eleemosynary institutions in England, a few generations ago, and put the inmates into the cotton mills? We can not answer those things.

Mr. LONDON. What I had in mind was that this was a temporary condition in this plant.

Mr. FREY. No; this was the fixed policy.

We found these three principal methods of payment in operation: Task and bonus, premium, and differential piece; but they varied in almost every plant. In some plants the management felt that 35 per cent bonus on the hourly rate was the necessary bonus to secure the fullest output from the workers. In other plants we found that they thought 20 per cent was enough. We also found that there were combinations or branch lines from these main systems, so that we found in all some 27 different forms of those three basic methods of payment, each one endeavoring to stimulate the workers to the right degree.

I want to say, in justice to some of the efficiency engineers and some of the firms, that they were conscious of the danger of overspeeding labor, and, while they might set their tasks high, they were unwilling that the workers should exceed the tasks set, and they penalized a worker for doing much more than the task set, some of them by removing the hourly wage rate, so that if it was a 10-hour day and the operator performed the task within an hour, within the time set, and earned a bonus each hour, if they exceeded their output, and would make the "ninth shoe" that was spoken of this morning, they were penalized by merely getting their bonus and not getting over the 8-hour rate. But we only found four firms that had made a definite effort to prevent overexertion. In all of the others we found such conditions as I have called attention to, as added stimulus to go the limit.

Mr. LONDON. Four out of how many?

Mr. FREY. Thirty-five.

We also found that it was almost impossible to secure any scientific basis for a comparison between these various forms of payment. We could submit a good many figures to you showing that under a bonus system, at a certain basis, a worker would receive 15 or 20 per cent more total earnings in a week than under some other system for the same number of pieces, but I am not going to burden you with that. I will simply say that if the committee desire we will have the mass of figures worked out in Mr. Hoxie's book, and it would be too dry reading to submit at this time, but very valuable. I merely want to say that this subject was minutely analyzed. Perhaps I can call your attention to this—I am just reading from my own field notes now, and I leave out the names of the efficiency engineers who were with us on this trip:

I asked on the way down, discussing the tasks and bonus, the task and premiums with ———, and ———, and ——— if a man beats the task—that is, should the man on a task set for 10 per day put up 11, would he receive the full time allowed for task and bonus on the eleventh and twelfth piece?

Under the premium system at ——— manufacturing company, if the task was 10 and the man put up 11 or 12, he would receive but one-half the total time around for all over 10.

I might say that that is the Halsey system that is in vogue at the Watertown Arsenal, where instead of the man on the ninth shoe getting $1.50, the time is set, the man is paid one-half of all the saving that he makes: Example, if 100 pieces a day are the required task to receive bonus at ——— and the basis was 33⅓ per cent, and 3 cents per piece allowed. This would give the worker $4 for his day's work. If he put up 50 pieces in addition, this would give him $2 more, making his earnings $6. At the —— Co., if the task was 100 and the price equivalent of 4 cents, the man would get $4 for the 100, and half of that price for all over, so that but 2 cents would be given for all over the 100.

If he made 50 more, he would get but $1, making $5 in all. Therefore, under the task and bonus system, one worker in one plant would receive $6 for 150 pieces, and in the other plant, under the premium system he would receive $5 for 150 pieces. Both of these plants were in the same city, and both used the same time study and task setting methods, but one paid bonus and one paid premium. There would be a difference of $1 a day in the earnings in such an instance as just cited.

Mr. London. The same number of hours?

Mr. Frey. The same number of hours; yes, sir. I find the time, Mr. Chairman—the time is passing, and I wanted to go into greater details in some of these matters, and I must touch on the Watertown Arsenal—I would like briefly to say something about speeding up, and then pass from that to what I think is an even more important feature.

Here, again, instead of making this an oral statement, I will condense by reading the joint conclusions reached by Mr. Hoxie and indorsed by Mr. Valentine and myself:

> A much more definite issue is brought up by Mr. Taylor's claim that "scientific management" guards the workers against overspeeding and exhaustion through careful studies of fatigue and the setting of the task on the basis of a large number of performances, by men of different capacities and with due and scientific allowance for the human factor and legitimate delays. It has been pointed out already in the discussion of time study that tasks are set in all sorts of ways, with reference to the men chosen and the number of performances timed. There is no general rule. And it was also demonstrated that no scientific method had been developed for the making of human allowances, and that these are sometimes very liberal, but sometimes also unduly curtailed. It must be admitted on the other hand that "scientific management" can and often does go far through the study of machinery and the careful observation of the ongoing process of production toward the establishment of proper allowance for legitimate delays, not connected directly with the human factor. When we come, however, to the matter of fatigue studies, and their connection with speeding and exhausion, Mr. Taylor's claim seems to break down completely. No actual fatigue studies were found taking place in the shops, and the time-study men employed, who should be charged with such studies, seemed, in general, to be quite indifferent or quite ignorant in regard to this whole matter. Fatigue studies apparently are not made when the tasks are set, and, if afterwards complaint is made, the classical method of dealing with the subject is to "demonstrate" to the worker that the task can be done in the time set. Efforts to discover from "scientific management" experts proper methods for studying fatigue brought out only vague replies. Were it not for certain examples cited in "scientific management" texts, there would seem to be no ground for crediting it with any scientific aspirations in this connection. This does not mean that no attention to fatigue is given in "scientific management" shops. Cases were found where the health and energy of the workers were carefully observed and attempts were made to adapt the work to their condition, but the methods employed were the rough and ready ones of common-sense observation.

Mr. Frey. In one plant, and the gentleman who owns this plant is a very high-grade man in every respect, a good citizen, with an interest in the welfare of his employees, scientific management, instead of keeping him informed of what is going on in the plant, prevented him from discovering a great many things. There we found overstrain in more than one instance. There was one machine in the plant, perhaps as long as this table [indicating] which is operated by a foreman, or what was called a straw boss and a man assistant. On this side of the machine [indicating] were five girls who took the material from a table farther away and placed it into compartments as the machine went around, and gathered this material up. At the other end three girls picked up the finished product of the machine and put it away. The bonus depended on gang production. If there was any interruption in the production it meant perhaps loss of the bonus. This gentleman wanted us to discover how the employees felt toward scientific management, and we were given the privilege of interviewing many of them, one by one. We discovered that the five girls who fed the material into the machine on this side [indicating]—each fed two bins—when they wanted to answer calls of nature they had to stop the machine, and the foreman raised the dickens, because there was a break in the production, and the girls had got to the practice of taking cathartics to prevent loss of time during working hours, because they found, with the girls leaving intermittently, that they could not keep the bins filled over a minute at what they were forced to keep their own and the absent girls supplied. It was found that the girls could not answer calls of nature and keep up with the time which was set for the performance of the task.

As indicating that all the scientific management experts are not of the opinion that the day's work or task should not be exceeded, or that speeders-up should not be employed, Mr. Parkhurst read a paper before the American Foundrymen's Association, in which he described how he had introduced the system in one of the establishments in Detroit. He advocates the breaking or records, and advocates the stimulating of the men by pacemakers. I will quote this brief sentence from his paper:

> They have gang production there in the foundry, and the same men have been running the job for some time.

Here he says:

> These same men asked to be told a day or two before the pattern went out of the sand—

That is, before the order was completed—

> so he and his gang could put up a record that no other gang could touch.

It is from such records, plus the time studies, that the records for performance are established.

We found this: That the tendency of scientific management is to bring about an autocracy in industry. They all told us it was impossible to successfully work out the methods of scientific management if there was such a thing as industrial democracy; that their methods were accurate; they knew what they were doing, and that these features were not more subject to collective bargaining than the question of whether the sun sets in the west or the compass points to the north; that when they demonstrated anything scientifically that was the end of it, and therefore there could be no collective bargaining; that the methods of scientific management are the complete negation of what we call industrial democracy.

We found but two plants in the country where methods of scientific management were applied, where union men were employed. In one of the plants union men were only employed in one department, and in that department there were no negotiations with the company relative to wages. In other words, while they were members of the union, the union in no way took up terms of employment with the management. As to the other plant where union men were employed, they were employed as the result of a boycott that was nation wide and the company's product had become so seriously affected because of these labor troubles that they had entered into an agreement with the unions shortly before we visited the plant and they were trying to continue the system under union labor. Those are the only two cases where union labor was employed under scientific management to my knowledge with the exception of the Government navy yards and arsenals.

Mr. London. In those places, what did you find the attitude?

Mr. Frey. They were so bitterly opposed they were waiting for the system to be thrown out or go on a strike. I should like to call the committee's attention to what I have to say on pages 21, 22, and 23 of my report and pass over without touching on it.

Mr. Keating. You will insert that in the record?

Mr. Frey. Yes, sir; because that deals with this question of industrial democracy. There is one tendency of scientific management that, to my mind, is perhaps as serious, and that is that the motion studies made in connection with the time studies, aim to transfer to the firm, as the firm's property, what we call craft skill, or craft knowledge and manual skill. They aim to supplant the skilled labor with lesser skill or unskilled labor. To illustrate: in one of the large establishments that I speak of where they had standardized the length of threads, there were a number of men who had been in the company's employ from 15 to 25 years whose wages on that work ran from $33 to $38 a week. When they introduced this system of subdivision they called in these men and gave them two weeks' pay for faithful service and let them go and put in women, who received only one-half of what these men had previously gotten. The object of scientific management is to subdivide the skill so that a little bit can be done by one workman and a little bit by another. To use an illustration, they will study a barber, so that in the barber shop there will be one man who will be doing nothing but getting water and keeping it at the right temperature; one barber or man to work up the lather; another to apply it; another man to do the shaving; one man to do the stropping; another man to wash your face, and to wipe your face with a towel——

Mr. London. How about the man who does the talking?

Mr. Frey. Oh, they would have a phonograph for that. It is that subdivision that is dangerous, and I would like to have inserted in the record an editorial that appeared in the International Molders' Journal, on pages 26 and 27. It shows the gist of this tendency.

Mr. Keating. Without objection it will be inserted at this point.

(The document referred to is as follows:)

MODERN INDUSTRY AND CRAFT SKILL.

The one great asset of the wageworker has been his craftsmanship. We think of craftsmanship ordinarily as the ability to manipulate skillfully the tools and materials of craft or trade. But true craftsmanship is much more than this. The really essential element in it is not manual skill and dexterity, but something stored up in the mind of the worker. This something is partly the intimate knowledge of the character and uses of the tools, materials, and processes of the craft which tradition and experience have given the worker. But beyond this and above this, it is the knowledge which enables him to understand and overcome the constantly arising difficulties that grow out of variations, not only in the tools and materials, but in the conditions under which the work must be done.

In the past, for the most part, the skillful manipulation of the tools and materials of a craft and this craftsmanship of the brain have been bound up together in the person of the worker and have been in his possession. And it is this unique possession of craft knowledge and craft skill on the part of a body of wageworkers—that is, their possession of these things and their employer's ignorance of them—that has enabled the workers to organize and force better terms from the employers. On this unique possession has depended more than on any other one factor the strength of trade unionism and the ability of unions to improve the conditions of their members.

This being true, it is evident that the greatest blow that could be delivered against unionism and the organized workers would be the separation of craft knowledge from craft skill. For if the skilled use of tools could be secured from workmen apart from the craft knowledge which only years of experience can build up, the production of "skilled workmen" from unskilled hands would be a matter in almost any craft of but a few days or weeks; any craft would be thrown open to the competition of an almost unlimited labor supply; the craftsman in it would be practically at the mercy of the employer.

Of late, this separation of craft knowledge and craft skill has actually taken place in an ever widening area and with an ever increasing acceleration. Its process is shown in the two main forms which it has been taking. The first of these is the introduction of machinery and the standardization of tools, materials, product, and process, which makes production possible on a large scale and the specialization of the workmen. Each workman under such circumstances needs and can exercise only a little craft knowledge and a little craft skill. But he is still a craftsman, though only a narrow one and subject to much competition from below. The second form, more insidious and more dangerous than the first, but to the significance of which most of us have not yet become aroused, is the gathering up of all this scattered craft knowledge, systematizing it and concentrating it in the hands of the employer, and then doling it out again only in the form of minute instructions, giving to each worker only the knowledge needed for the mechanical performance of a particular relatively minute task. This process it is evident separates skill and knowledge even in their narrow relationship. When it is completed the worker is no longer a craftsman in any sense, but is an animated tool of the management. He has no need of special craft knowledge or craft skill, or any power to acquire them if he had, and any man who walks the street is a competitor for his job.

There is no body of skilled workmen to-day safe from the one or the other of these forces tending to deprive them of their unique craft knowledge and skill, Only what may be termed frontier trades are dependent now on all around craftsmen. These trades are likely at any time to be standardized and systematized and to fall under the influence of this double process of specialization. The problem thus raised is the greatest one which organized labor faces. For if we do not wish to see the American workman reduced to a great semiskilled and perhaps little organized mass, a new mode of protection must be found for the working conditions and standards of living which unions have secured, and some means must be discovered of giving back to the worker what he is fast losing in the narrowing of the skill and the theft of his craft knowledge. It is another problem which the organized workmen must solve for themselves and for society.

Mr. Frey. Before passing to the Watertown Arsenal, I would like to read the statement that Mr. Hoxie, Mr. Valentine, and I prepared after we had finished the Hoxie report. It contains the substance of our joint conclusions, and I will read it for the benefit of the committee:

> Two essential points stand forth. The first point is that "scientific management," at its best, and adequately applied, exemplifies one of the advanced stages of the industrial revolution which began with the invention and introduction of machinery. Because of its youth and the necessary application of its principles to a competitive state of industry, it is in many respects crude, many of its devices are contradictory of its announced principles, and it is inadequately scientific. Nevertheless, it is to date the latest word in the sheer mechanics of production and inherently in line with the march of events.
>
> Our industries should adopt all methods which replace inaccuracy with accurate knowledge and which systematically operate to eliminate economic waste. "Scientific management" at its best has succeeded in creating an organic whole of the several departments of an institution establishing a coordination of their functions which had previously been impossible, and, in this respect, it has conferred great benefits on industry. The social problem created by "scientific management" does not lie in this field. It is in its direct and indirect effects upon labor that controversy has arisen, and it was in this field that the investigation was principally made. For the present, the introducers and appliers of "scientific management" have no influences to direct them, except where labor is thoroughly organized, other than their ideals, personal views, humanitarianism or sordid desire for immediate profit with slight regard for labor's welfare.
>
> The second point is that neither organized nor unorganized labor finds in "Scientific management" any adequate protection to their standards of living, any progressive means for industrial education, or any opportunity for industrial democracy by which labor may create for itself a progressively efficient share in efficient management. And, therefore, as unorganized labor is totally unequipped to work for these human rights, it becomes doubly the duty of organized labor to work unceasingly and unswervingly for them, and, if necessary, to combat an industrial development which not only does not contain conditions favorable to their growth, but, in many respects, is hostile soil.

Mr. Frey. While scientific management has said a great deal about training the worker and making him efficient, with but one or two exceptions we found no apprenticeship system. We found they were opposed to apprentices; that they believed that the old-time mechanic was no longer necessary, and that they could specialize the work so as to get along without them. The Watertown Arsenal has an apprenticeship system. Col. Wheeler told us at that time they had 11 apprentices in that plant. We found plants where they had previously had an apprentice system, that they had eliminated it. One of the officials of a plant, with reference to apprentices said to us:

> We can not take a man under apprenticeship and let him do different things for four years and then pay him $21 per week. We must put him on one job and keep him on one job.
>
> There are some boys and girls in the composing rooms, and I would like to teach them to become printers, keyboarders, proof readers, make-up men, stone men, and teach them two or three phases of the business, but I have the threat in the back of my head that at the end of four years I must make them earn $21 a week, and I can go at the end of the four years and get a much better workman for the money, so I must keep them on one job.

In other words, under this system, he depended on hiring men that other employers had trained, but was not willing to pay for training the men himself.

Mr. Keating. In your judgment, it practically wipes out the apprenticeship system?

Mr. FREY. Absolutely.

Mr. KEATING. It affords the worker no opportunity to learn his trade?

Mr. FREY. Absolutely not.

For instance, one gentleman who came before us and spoke about his plant, and the ideal conditions existing there said with reference to apprentices:

> Where you manufacture you must specialize, and a first-class all-around mechanic can do better, using all his knowledge. We decidedly do not have the facilities here for making first-class, all-around mechanics; a specialist is more valuable to the company.

I think, Mr. Chairman, that inasmuch as you want to know something, or I think you do, about the Watertown Arsenal, it might be well to refer to that at this time.

Mr. KEATING. I think the committee would appreciate testimony on the Watertown Arsenal.

Mr. FREY. I will say that I have here our field notes taken during our investigation of the Watertown Arsenal. I also have the results of the investigation made by Mr. Miner Chipman, who is an efficiency expert, who was trained under Mr. Harrington Emerson originally, and later on went into the business himself.

Mr. SMITH. How long a time was he in obtaining these field notes from the Watertown Arsenal?

Mr. FREY. I do not know how long Mr. Chipman devoted to that.

Mr. SMITH. How long did you spend yourself?

Mr. FREY. Three or four days.

Mr. KEATING. For this entire investigation, how long a time did you spend?

Mr. FREY. Sixty days in the field, but I have been studying this question for a good many years. This might interest the committee. Here is a card I got from one of these scientific managers himself, and here is the information they require about an applicant for work before they will give him a change to go to work: "Name, residence, age, height, weight, color, nationality, education; married or single, relatives employed in this company; number and relation of relatives; had he been previously employed; children; religion; politics; union or nonunion," and then there is also that physical examination of the eyes, ears, heart, lungs, and kidneys befort they are able to get a job.

Before going to Mr. Chipman's evidence, which you will find interesting, and some of it charted, let me say that there has been a great deal of controversy over the Watertown Arsenal and the conditions that exist there. There have been very contradictory statements in reference to it. I merely want to call the attention of the committee first to some facts that came under my own observation. The jobs were set through time studies made very largely by a Mr. Merrick. The jobs were set very unevenly. Theoretically, when a job has been time studied and motion studied by an efficiency expert, accurate time should be set. There should be no marked variation in the difficulty of performing one task over the other.

In the Watertown Arsenal, we found most extraordinary conditions on a number of jobs. I am a molder by trade, and worked at it some 15 years, and for almost 20 years, I have been an officer of the

Molders' Union in one capacity or other. So, I am thoroughly familiar with foundry conditions, at least in my own trade. I will call attention to three jobs—I could call your attention to many more, but it is not necessary—one of which was a little square band, made in a flask. This box was a small one, 14 inches by 14 inches and 7 inches deep. This band was made in this small bench flask, and finally they changed the size of the band and made it smaller. Now, while the band was made a little smaller, it required identically the same amount of work to make the mold; the same amount of sand had to be rammed, and the same motions gone through. But they took off five minutes when they made the pattern a little smaller on one side. They took five minutes off because they made the pattern smaller, though this had made no difference in amount of labor required to produce it.

On another job, steps for a gun carriage. The steps had diamond shapes on them. They were made one pattern in a flask. They later on made a smaller pattern and were able to put two in the same flask. These two patterns, however, were larger and occupied more space than the single pattern, and it was necessary for the molder to run nails through the sand between these two patterns to keep the mold from breaking down when the iron was poured in, so that the molder had the work of securing the sand between the two patterns; had two patterns to draw instead of one, and instead of allowing the same time on the job, they cut off one half an hour's time, all under scientific management.

A more extraordinary incident was the molding of a hand wheel—now, I may be wrong in the name of the hand wheel, but on the job, I am right. It was for a 14-inch and 16-inch gun carriage. The original job had been made for some time, when the new hand-wheel pattern was brought in. I am speaking of these jobs, having seen them and discussed these in front of Col. Wheeler and Maj. Wesson, who was responsible for setting the time. The new hand-wheel pattern was identically the same as the first one with one or two minor exceptions. The bead on it and the oval of the arms was practically as deep. I can assure the committee, in making the joint or parting, there was practically no difference, but the new wheel had this difference, that the hub was 2 inches shorter than the hub in the original pattern. They took off two hours and a half time for 2 inches less sand that the man had to shovel and ram in the drag. I think I am well within the mark when I say that the average molder would not take over five minutes and go easy, to shovel in the extra sand and do the extra ramming in the drag.

When they reduced the hub 2 inches, by some hocus pocus they cut two and a half hours off the job.

I could weary the committee by taking up one piece after another, but I do not think it is necessary. The employees of the Watertown Arsenal became interested in what scientific management was doing. They became concerned, and they finally went to Mr. Minor Chipman, whose offices were in Harvard Square, Cambridge, and who had a staff of highly trained men with him, and he consented to make an actual investigation of the results in scientific management in the Watertown Arsenal. This [exhibiting book] is what he discovered. This is his report, and it is worth its weight in gold, because you can not get any more. He had access to some of the Government

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records. In addition to that, some 221 employees furnished Mr. Chipman with information as to their work, as to their opinions relative to scientific management, and why they held them.

Now, if there is anything scientific in time study and task setting, I will say it is something in the evenness of the jobs and any serious errors not being made in setting the time for the task. But we discover instances where the time-study man had made such serious mistakes as the difference between 8½ hours time to make a job and 27 hours. I have here three charts showing the efficiency of certain workmen in the plant during a month, indicating that instead of the tasks having been studied with any degree of accuracy, that the tasks were unbalanced so that at times the men could only make 21 per cent efficiency on the job and sometimes 200 per cent. It is the best evidence I know of, of the absolute unworthiness and unscientific character of time studying. I think the committee should see this chart.

(The charts were thereupon exhibited to the committee.)

Mr. **Frey.** This is a record of employee No. 2518, being for the month of April, 1914. He was a very high-grade man. His average efficiency for the month was 121 per cent. Here is 100 [exhibiting]. Had the job been set with scientific accuracy, a man working normally would show a straight line running along here [exhibiting], but instead of that, he produces more than the standard, and his average was 121 per cent. This zigzag line is the job he worked on. In this one he made 172.9 per cent efficiency, where here [exhibiting] he was able to accomplish only 45 per cent efficiency. This is evidence, as far as this workman is concerned, that instead of the time being set accurately, it was set very ridiculously and very carelessly—more carelessly than anything you would expect to find in any well-managed establishment.

Mr. **London.** Was he working all the time on the same kind of work?

Mr. **Frey.** No, sir; working on different jobs. A job would come in and he would be allowed so much time to perform the work. If the time was set accurately, he would have 100 per cent efficiency.

Mr. **London.** Occasionally he fell below 60?

Mr. **Frey.** He fell to 49.

Mr. **London.** Is not that a case where he was asked to do work he was not accustomed to?

Mr. **Frey.** No, sir; but the time being set so short, it was impossible of accomplishment.

Mr. **Keating.** All this work was in line of his trade?

Mr. **Frey.** He was a machinist, and these are different jobs given to him on his machine.

Mr. **Keating.** You say this man was a high-class machinist?

Mr. **Frey.** Yes, sir; his number is 2518. I have not his name, but he is a very high-class man, and his work is a matter of Government record. Here is a man [exhibiting] on another job. This is another high-grade man. Here is a low-grade man [exhibiting]. His average efficiency through the period was only 96 per cent. We find a very remarkable variation here [exhibiting]. Although his average was only 96 per cent for the period October 1, 1912, to September 30, 1913, his efficiency went as high as 149 per cent on some jobs. On this job here [exhibiting] he went as low as 39.3 per cent. It is evident that so far as setting the times are concerned, there was no scientific accuracy about the thing at all, when we get the facts and get away from theory.

Mr. **Keating.** Have you a third man's record there?

Mr. **Frey.** Yes, sir; this is a third man [exhibiting]. I do not want to take up more time. It is really an extraordinary one. It is the same workman, No. 2518. During this time his average efficiency was 121.35 per cent. In other charts his efficiency was only 121 per cent. This month his efficiency was a little higher. In this job he actually did the job in one-half the time that had been set for it. On this job [exhibiting] he was only able to accomplish 21 per cent of the work which the time card called for.

Mr. **London.** How was the standard of 100 per cent determined?

Mr. **Frey.** Congressman, that is what I tried to explain in my general statement in the beginning. There is no standard except an individual's time study, and that man's idea as to what the standard should be.

Mr. **London.** Referring to the arsenal, how do they fix the standard?

Mr. **Frey.** Out of their heads. There is no standard in existence except what they want to establish.

Mr. **Keating.** Have you copies of those diagrams, Mr. Frey?

Mr. **Frey.** No, sir; I have already said that this is a most valuable record which I have.

Mr. **Nolan.** Is there any way by which the committee could borrow this and then return it?

Mr. **Frey.** I will loan this to the committee, but I would want to hold the committee responsible for it.

Mr. **Keating.** If the committee wanted to reproduce the three charts it will only be necessary to send Mr. Frey to some photographer to have it done. It is not necessary to take the book out of his possession except to have the photographer make copies of these charts.

Mr. **Nolan.** Can you have a photographer make copies and submit them to this committee to be incorporated in your testimony?

Mr. **Frey.** Yes, sir. I want to quote now a moment from my own field notes during the interview we had with Col. Wheeler, in which I was taking up the jobs in the machine shops:

> *Case No. 1.*—First a time of 5 hours was set on a job by the time study man, but this was found to be insufficient and 12 hours was allowed, and later on it was increased to 19 hours as the time study man found he had made a mistake in changing the gears.
>
> *Case No. 2.*—The premium had to be given up, because the time study man found that there was no telling what was to be done until the job had been completed.
>
> *Case No. 3.*—The time on the job was set at 8½ hours; later on it was found necessary to allow 27 hours time for making the job, the time study man having made a mistake of 18½ hours on a 27-hour job.
>
> *Case No. 4.*—The time study man set a time of 5 hours 36 minutes on a job which it was found necessary to set 12 hours and 54 minutes on when the machinist was able to have his complaint heard by a higher authority.

In case No. 1 they discovered that somebody had changed the gears in the machine, without notifying the time study man or the task setter, but the machinist had to bear the entire burden of that thing himself.

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On another job, case No. 3, a time of eight hours and a half had been set. The machinist claimed that he could not possibly finish the job in that time; that it was an inhuman task, and later a study was made and it was discovered that they had made an error in the planning room and eventually the time was set at 27 hours. So, after the job had been given to the workman with 8½ hours to perform it, it was necessary eventually to allot 27 hours to the job. I want to call attention to this not that it was a great error, but the fact that it is only those kinds of errors that give the workmen much of a chance to be heard from, or to get a hearing from the management, and it is the hundreds and thousands of mistakes of less size than this that bear down and harass the workmen and leave them with no opportunity to get a hearing. While, of course, these are extraordinary mistakes, just as many mistakes are occurring right along that do not show such a remarkable margin of error as those.

Another thing we found in the Watertown Arsenal that seemed to be very unfair to labor—and it seemed to be unscientific from a scientific viewpoint—was the practice of putting skilled men under the task bonus system and paying helpers who were with them straight day wages, which made the mechanic on the job a task master over the unskilled laborer, who only got a straight day's wages. and it saved them the trouble of having a foreman over men of that kind, because each mechanic would see that the helper was hitting the hay as rapidly as possible, in order to get the bonus.

Mr. London. On what basis was the day wage calculated?

Mr. Frey. I do not know. I did not go into that. It had reached the point where some mechanics had found it necessary to, as they say, grease the laborer's pocket, and they paid out $2, $3, or $4 a week to their helpers, in order to give them the necessary stimulus to put up the day's work. But gentlemen, I think I had better open myself to questions. I am afraid if I get started on some of these things, with time passing—and I have not dug into the matter that I have here at all. One moment. I can not pass this. The point has been raised by Gen. Crozier and others that organized labor was opposed to scientific management because it was organized labor, and that unorganized labor was not. Out of 221 employees who sent information to Mr. Chipman, I find the following:

> There is evidence of deep-rooted objections to the system in the fact that so large a number—221—or 94 per cent of the 235 men who replied signed the letter authorizing Miner Chipman to go into the matter as their counsel in the matter.
>
> It has been claimed for years by the ordnance department that it was the union men who were opposed to the Taylor system and who fomented agitation against it at the Watertown Arsenal. The answers to the question sheet show the opposite.
>
> A majority of those "opposed" to the Taylor system at the Watertown Arsenal are nonunion men.
>
> The exact figures of the 214 "opposed" are: 113, or 52.8 per cent are nonunion and 101 are 47.2 per cent are union men. Of the 16 "not opposed" 11 are nonunion men and 5 are union men. The answers to question 11, "Do you think the agitation is brought about through union labor or similar sources?" show 137 answering "no," 28 answering "yes," and 70 giving no answer. This is what the men themselves know to be true, and they are in a better position to know the truth than anyone else.

Mr. London. Was that 7 or 17?

Mr. Frey. Seventy, giving no answer, the point being that the unorganized workmen in the Watertown Arsenal showed a greater opposition to the system, so far as numbers are concerned, than the union men themselves.

There have been some statements as to the accidents in the Watertown Arsenal. Now, these are Mr. Chipman's figures. I presume he secured them from some Government records, because they are detailed and specific, and I have heard that Gen. Crozier has made the statement that the accidents have decreased, but that the figures he uses to indicate this are based not upon the number of men employed and the number of accidents but rather upon the number of accidents in proportion to production. I do not want to say that is so. That is my understanding. The record here indicates that there was 6,628 men employed at the arsenal in 1909 and 6,127 in 1914, so that there had been a decrease in the number of employees, but in 1909 there were 286 accidents, and when the system got working well in 1914, there were 1,518 accidents or an increase of 428 per cent in the number of accidents in a period of five years, under which scientific management was in operation.

Mr. LONDON. You have not the number for the year 1914?

Mr. FREY. Yes, sir; I have given it.

Mr. LONDON. I thought it was 1909 and 1911.

Mr. FREY. No, sir; 1914. The total number injured and absent from duty was increased from 236 to 566, or 135 per cent in five years. Of those injured and absent from duty, the increases for the respective periods of absence, have been as follows:

From 0 to 5 days, from 87 to 229.
From 5 to 10 days, from 37 to 75.
From 10 to 15 days, from 13 to 37.
From 15 to 20 days, from 44 to 101.
From 20 to 25 days, from 13 to 34.
From 25 days and over, from 46 to 90.
Injured and not absent, from 50 to 952.

I want to call the committee's particular attention to the enormous increase in loss from 15 to 20 days, and also the number of days loss from 25 days and over—being from 46 to 90.

Mr. LONDON. To what do you attribute that?

Mr. FREY. The nervous strain on the men; the failure of the theory of scientific management to work in practice. Accidents would decrease if the theory worked out in practice, but our experience was that practically every theory as announced by any of the leading efficiency experts, so far as labor was concerned, fell down in practice, and very frequently the practice was directly opposite to the theory. I have a large number of workers' opinions here in which they give their reasons why they are opposed to scientific management.

Mr. KEATING. In giving your testimony, you said in a certain year more than 6,000 men were employed at the Watertown Arsenal.

Mr. FREY. Yes, sir.

Mr. KEATING. As a matter of fact, is not the working force of the arsenal 600?

Mr. FREY. I will go right back to my figures. I said I am quoting from Mr. Miner Chipman's records. I did not gather these figures myself. No; he had 6,628 in 1909 and 6,127 in 1914. Whether that means the total number of those employed or not, I do not know. I do not know where he got the figures, but these are the figures he has. One moment. This is from the report of the Chief of Ordnance, and I take it that it covers all of the arsenals. I believe I turned over one page too many.

Mr. LONDON. And the number of accidents you spoke of related to all arsenals?

Mr. FREY. They must have referred to all arsenals.

Mr. KEATING. Have you the figures for the Watertown Arsenal?

Mr. FREY. I thought I was quoting the Watertown Arsenal figures, but I believe it must have been for all arsenals.

Gentlemen, I have hardly begun to uncover the soil, but, as I said in the beginning, I have so many facts that I have simply tried to bring out what I thought would interest the committee most and prove most valuable.

Mr. KEATING. If you should encounter the Watertown figures, it might be well to incorporate them in the hearing in connection with your testimony.

Mr. SMITH. About how many different industries employ the Taylor system?

Mr. FREY. It would be difficult to answer that question. There is only one plant that I know of that has got nothing but the Taylor system and the other plants have partly the Taylor and partly something from someone else.

Mr. SMITH. Do nearly all plants have shop management of one kind or another?

Mr. FREY. No, sir.

Mr. SMITH. What system has Ford?

Mr. FREY. A system he developed himself.

Mr. SMITH. He has the welfare system, has he not?

Mr. FREY. Yes, sir.

Mr. SMITH. He looks after the workmen and sees to their comforts and sees that they are provided for?

Mr. FREY. Yes, sir.

Mr. SMITH. Do the workmen object to this scientific management?

Mr. FREY. The workers that I talked with were either opposed to it or very strongly opposed to it. The only workers I ever found in favor of it were some of the functional foremen who received a bonus under the system.

Mr. SMITH. What have you to say about it being necessary—scientific job management, as we are applying it here in this country—being necessary for the interests of the manufacturers?

Mr. FREY. My own opinion is that scientific management so far as labor is concerned, is wholly unnecessary for successful production. That there must be something practical—sound common sense—in the management there is no question, but I feel that none of these systems, whether the system of Mr. Taylor, Mr. Gantz, Mr. Emerson, Mr. Parkhurst, or any of them, are at all necessary as far as the labor element is concerned.

Mr. SMITH. What harm do they do?

Mr. FREY. Where they applied, they first of all prevent any adequate expression of the workers' desires or consideration of the workers' desires. They establish an autocracy in the industry. They make a few men—a group—do all the thinking and all the ordering. The system prevents the worker from thinking.

Mr. SMITH. How long has it been in vogue?

Mr. FREY. A very few years.

Mr. SMITH. And it is a new system?

Mr. FREY. It is a new system; yes.

Mr. SMITH. Are the workmen generally opposed to the piece system?

Mr. FREY. It all depends on the industry. In some industries the workers favor piecework sometimes, and in others they are strongly opposed to it, and in some organizations, such as I am a member of, all the members who work on stove plate work on piecework, whereas, on other work, they can not work so well and are vigorously opposed to it.

Mr. SMITH. Where it can be worked, generally speaking, what is the sentiment?

Mr. FREY. As I say, so far as the workers are concerned, some are opposed and some are not.

Mr. SMITH. Are there not a great many workmen in the different industries in favor of the piece system?

Mr. FREY. I can not answer that. The cigarmakers work on piecework and probably prefer it.

Mr. SMITH. Are not all the manufacturing plants conducted on the piecework system?

Mr. FREY. I think so.

Mr. SMITH. Does not that take the place of the bonus system?

Mr. FREY. No, sir.

Mr. SMITH. You think that is added to the piece system?

Mr. FREY. It is added to the piece system, because either under the task or bonus, unless you do so much, you get a great deal less. In piecework you get exactly in proportion to what you do.

Mr. SMITH. What objection has the workman to time study?

Mr. FREY. Some have the feeling that it is humiliating to have a man standing over your back, or around you, with a stop watch, checking off every movement you make, trying to catch you beating some little time. Others object because it forces them to work harder and harder, and it puts into the employer's hands a power which they use unjustly against them.

Mr. SMITH. You think the general objection is that it overworks the men?

Mr. FREY. I should say from what the workers told me, that I interviewed, it was half and half. It was partly the feeling of humiliation in having someone stand over them with a stop watch and others felt that the system meant making their work that much harder.

Mr. SMITH. What is the feeling of the workmen about the Taylor system?

Mr. FREY. I have not encountered one who favored it. All that I have interviewed are bitterly opposed to it.

Mr. SMITH. Are the workmen generally opposed to a bonus system?

Mr. FREY. Some of the workers—I want to revise that statement as to the Taylor system. I found some workers working under the Taylor system who said they did not consider it hurt them much.

Mr. SMITH. But, generally speaking, you think you are safe in saying they are opposed to it?

Mr. FREY. Yes, sir.

Mr. SMITH. Are the workmen generally opposed to a bonus?

Mr. FREY. I found some who were not opposed very strongly to a bonus, but those were workers who had been trained in that system and knew nothing about conditions outside. Generally, I found them opposed to the bonus because they held that their bonus system or premium system robbed them.

Mr. SMITH. Do you think it should be abolished?

Mr. FREY. Absolutely.

Mr. SMITH. You think the workmen would be pleased to have it abolished?

Mr. FREY. Yes, sir.

Mr. SMITH. Is the same true of the premium system?

Mr. FREY. Yes, sir.

Mr. SMITH. What is the objection they have to that? There is nothing humiliating about that.

Mr. FREY. The only objection to the premium system is, for instance, taking the nine shoes referred to by others—instead of getting as much for the ninth shoe, the workmen would get only one-half. In other words, when they increased their output beyond a certain point, they get only half. Now, under the task and bonus system, unless they complete the task within the time set, they do not get any bonus. In other words, if the time set for the job was 1 hour and the worker took 1 hour and 1 minute to complete the job, he would get absolutely no bonus. The bonus is an important feature. Some firms pay as low as 20 per cent, and I investigated a number where it was 33⅓ to 35 per cent.

Mr. SMITH. It is optional with the workmen to compete for it—it is not compulsory, is it?

Mr. FREY. It is practically compulsory. He has to do the best he can, because the foremen generally are after the bonus, also, and prod him up, and if he does not get the bonus, he loses his job.

Mr. SMITH. How many States in the Union have statutes against the bonus or premium system?

Mr. FREY. None that I know of.

Mr. SMITH. I take it, then, from your testimony, that the objection to the bonus and premium system is merely a matter of compensation?

Mr. FREY. No, sir; it is not merely a matter of compensation, but partly compensation and because it tends to drive the workmen to the limit of their capacity.

Mr. SMITH. Do you think generally the workman would be satisfied if the premium and bonus systems were taken away from them—that opportunity to compete for that premium or bonus is taken away?

Mr. FREY. I think, in a large number of instances, that is what they want.

Mr. SMITH. How about the expert workman, who could do possibly one-fourth more than the ordinary workman. We find a great many of them, because of their physical ability and muscular make-up, can do it with the same ease as the ordinary man. They should get more than the others. How would you work that?

Mr. FREY. They generally receive a different scale of wages.

Mr. SMITH. Well, I have heard it stated that there should be some inducement for a person to exert himself or practice his profession according to his ability, and if we do away with the premium and bonus system, there would be no inducement to do that. What do you say about that?

Mr. FREY. My experience is that the bonus system tends to make poor mechanics instead of good ones. I have figures, taken from the records, proving that the tendency of the task bonus system is to make the workers slight their work all they could, their only desire being to have it come so close to the standard as to be passed by the inspectors. Furthermore, as this work goes from one worker to another—it is subdivided—usually one does his share, owing to the skimping of the job by one set of workers, it makes it so much more difficult for the next group to perform their share.

Mr. SMITH. Do I understand from your experience with the workmen, they are not opposed to the piece system, then?

Mr. FREY. In some industries they are not opposed to piece work, and in some industries they apparently prefer it. However, in some industries, because of the character of the work performed in that industry, they are strongly opposed to it.

Mr. SMITH. There is not enough opposition to the piece work system to have that particular system come within the bane of the bill. It ought not to be interfered with by law?

Mr. FREY. I think it should be prohibited on certain kinds of work.

Mr. SMITH. I think we should name the classes in the bill, do you not?

Mr. FREY. I think it would be almost impossible to specify in the bill which work should not be done by piecework. To illustrate: A farmer has got a well-developed field. The soil is good. He has a reaper that works well. He might say, "I will pay you so much an acre for reaping this field." He will have, on another farm, very uneven ground, stones in the field, and perhaps a Virginia rail fence, where they have to get into the corners of the fence as well as in the middle of the field to do the reaping. In one field he could very well have that work done by the piecework, but in the other it would be absolutely impracticable.

Mr. SMITH. One thing is occurring to me, and that is one that I can not satisfy myself on. We have a labor department in our State. We have a large manufacturing State, with a great many laboring men in the State. We have the largest paper mill in the world in my district, and in Detroit there are other large industries, but we have a lot of workmen petitioning the legislature there or the department of labor to abolish the bonus system, and that is what I want to get fixed in my mind—to satisfy myself whether or not we are doing the right thing with this bill. It seeks to abolish it. I want to know the effect of that with the workmen. I do not care about myself. I would like honestly to know just how the workmen feel about that.

Mr. FREY. The workers of your State, if they should be of the same opinion as those I have personally interviewed——

Mr. SMITH. In how many factories—how many will that cover? You have had a great experience, and I acknowledge that.

Mr. FREY. About 20 plants. I spoke to the employees, and some of them I had private rooms set apart and had an opportunity to talk with them one by one.

Mr. SMITH. Have the workmen passed resolutions to abolish these two systems?

Mr. FREY. Yes, sir; the convention of the American Federation of Labor and the State federations have done so.

Mr. SMITH. Abolish the two systems?

Mr. FREY. Yes, sir.

Mr. SMITH. Well, they ought to know what they want.

Mr. FREY. Yes, sir.

Mr. KEATING. You are familiar with the attitude of the workers in the Government plants which would be affected by this bill?

Mr. FREY. Yes, sir.

Mr. SMITH. What have you to say as to their attitude?

Mr. FREY. When the stop-watch system was invoked, one of the unions struck. I think it is the only one instance in history of a Government employees' strike.

Mr. LONDON. Now, is not the piecework system just as objectionable—the bonus and premium system?

Mr. FREY. It has some of the objectionable features.

Mr. LONDON. Have you ever considered the question of the minimum wage in industries?

Mr. FREY. Why, I have spent a great deal of my time trying to establish a minimum scale for molders.

Mr. LONDON. On the piecework system?

Mr. FREY. No, sir; on daywork.

Mr. LONDON. Is not the daywork system not far removed from the piecework system?

Mr. FREY. Under certain conditions labor can be forced under any system—daywork, piecework, bonus, or premium. I can conceive of a task in one plant with the bonus and premium system where the workers would work easier than in a daywork shop. That is merely a matter of what might be——

Mr. LONDON. Then daywork, piecework, bonus system, premium system—all of these systems differ wholly in the form and in the extent of their exploitation of the worker?

Mr. FREY. I think that the principal difference is one of degree, but there are other considerations that have to be brought in mind, because, under scientific management, there is a new machinery introduced in industry which never existed before. In other words, there is a coordination of factors in production where before there had been looseness, and it is that coordination, coupled with the systems for speeding up labor, that makes it very much more injurious or so much more liable to be injurious than any other system.

This afternoon I have been discussing scientific management in its relation to labor. I have not discussed scientific management in relation to production outside of the human element. If I did that you could see how these things coordinate in scientific management. You can not separate them from one another. They become an articulate whole.

Mr. LONDON. You spoke of industrial democracy, which is a rather vague term—it is a newly coined phrase, is it not?

Mr. FREY. It is a term used to express a very intelligent thought.

Mr. LONDON. But it is newly coined, is it not?

Mr. FREY. It is a modern term.

Mr. **London.** Very much modern. Is not the real problem in which the worker is interested a question of duration of employment and regularity of compensation?

Mr. **Frey.** Why, I would state that I think—I would have to put it a little differently—that the workers' greatest concern is their standard of living.

Mr. **London.** And that is affected——

Mr. **Frey** (interposing). By hours, wages, conditions under which the labor is performed, etc.

Mr. **London.** One of the conditions is regularity of employment?

Mr. **Frey.** Yes, sir.

Mr. **London.** And any system of wages which fails to consider that is defective?

Mr. **Frey.** Unscientific.

Mr. **London.** Unscientific?

Mr. **Frey.** Yes, sir.

Mr. **London.** Have any of the employers who have introduced the efficiency system found difficulty in obtaining additional employees?

Mr. **Frey.** Some have, but I should say it was not a general complaint.

Mr. **London.** You referred to a case where old employees were paid two weeks' wages and were substituted by women?

Mr. **Frey.** Yes, sir.

Mr. **London.** Have you had an opportunity to trace what became of those old men?

Mr. **Frey.** Yes, sir.

Mr. **London.** What did become of them?

Mr. **Frey.** They were thrown into the industrial scrap heaps and were unable to work at anything else. They were tailors—ladies' garment workers.

Mr. **London.** You mean by "industrial scrap heap"—you are using again a phrase——

Mr. **Frey.** They were thrown into a labor market where there was no call for their services.

Mr. **London.** They were thrown out of employment?

Mr. **Frey.** They were thrown out of employment and were unfitted to take up any other employment except possibly selling newspapers. They were unfitted physically from working as tailors all their lives; they were unfitted to do laborious work.

Mr. **London.** Has a system of old-age pensions been introduced in any factories where you found the efficiency systems introduced?

Mr. **Frey.** Not that I know of. There were some welfare systems in some of them, to make it pleasant for the employees while they are there. I might say that in one of these establishments that was advertised so cleverly here a few days ago, when one of the girl's nostrils were offended by the odor from some other girl they called the welfare agent, and they would go to this girl and tell her to go down and take a shower bath. They kept the workroom smelling sweet. That might help some.

Mr. **London.** None of the factories concern themselves with the basic wage, do they?

Mr. **Frey.** Yes, sir; the basic wage bothers them a great deal. They are very much puzzled over what to do with it. Their basic wage is what they call the wage in the district, or what they pick it out to be. May I read a little bit from my field notes for your information? I had to cover another subject at the same time, but I think it will be interesting:

> A separate labor department is maintained and a physical examination of employees is made, but Mr. ——— stated that he did not know the details or the form and extent of these examinations. Mr. ——— said that many of the tasks were not set as high as formerly as it was found that too many could not reach up to them in practice. He has, therefore, favored liberalizing the tasks. This is a startling statement for if the tasks were originally set by scientifically determined standards, then they should not be changed. If they were set too high, then a mistake had been made either in the time or motion study, or the allowance for the human factor. This is proof of the large factor played by the judgment of the task setter. I asked ——— for a statement as to the basis which he had for the determination of the hourly rate, and this is his statement as read to him for his approval: "The basic rate is determined by the rate at which intelligent workers can be satisfactorily secured regardless of trade-union rates or competitive conditions." On meeting Mr. ——— the following day I carried this point further by asking whether he would accept the local wage rate as a basis and fix it as a permanent hourly rate. He said "Yes." "If, then," I said, "you found the hourly rate in New York to be 50 cents and the Baltimore rate 30 cents, you would permanently fix these rates under your task and bonus system." He replied in the affirmative. "Would it not be unfair to the New York employers?" was my next question, and he said that he thought not. He evidently has given much more thought to production than to industrial and commercial economics.

Mr. LONDON. In other words, the basic wage rate is determined by local conditions?

Mr. FREY. Yes, sir.

Mr. LONDON. And it is purely accidental?

Mr. FREY. Yes, sir.

Mr. LONDON. So that the bonus or premium is based upon the wage which is accidental, which depends upon the law of supply and demand as it prevails in a particular locality?

Mr. FREY. Or the trade-union scale.

Mr. LONDON. That is, wherever there is an effective trade-union?

Mr. FREY. Yes, sir.

Mr. NOLAN. Mr. Frey, Mr. Smith brought up a subject a while ago regarding legislation affecting the bonus and premium system and piecework system, and wanted to know if any States had adopted statutes prohibiting them. Is it not a fact that labor has not asked for any legislation of that kind, primarily due to the fact that if they did anything in the way of asking for that they would have to apply for an amendment to the Constitution?

Mr. Frey. I presume that is one of the reasons they have not asked for it.

Mr. NOLAN. Congress itself is not being asked to enact legislation only so far as it affects the Government employees?

Mr. FREY. Yes; that is right.

Mr. NOLAN. What attention did you find given by any employers operating scientific management to employees thrown out of jobs by increased production?

Mr. FREY. Absolutely none, and we asked most of them about it and they would shrug their shoulders and say that that was none of their business. Some of them—one or two—one of those gentlemen who had those peculiar conditions in his plant that I referred to, was somewhat interested. He stated that it was too big a problem for him to solve; that he could not stop introducing efficiency systems in competing with his competitors.

Mr. NOLAN. Did you find any considerable number of shops that you visited giving much attention to the question of fatigue studies?

Mr. FREY. We found not a single instance where long-time fatigue studies had been made. We did find in five or six plants that short-time fatigue studies had been made—for a single hour on the job, most of them, but we found none that went beyond that. When we inquired about these fatigue studies, referred to so much in works on scientific management, each employer said there was no such thing in existence.

Mr. NOLAN. The reason I asked that question is that I wanted to follow it with another. What does your committee mean by "rough and ready methods"?

Mr. FREY. I presume that we should have used the term "common sense" instead of "rough and ready." What we had in mind was common sense—the common-sense rule that governs a man who is used to handling workers.

Mr. LONDON. You do not mean antiquated methods?

Mr. FREY. I do not think they are. We visited some shops which did not have scientific management and they were very successful in holding their own with shops with scientific management.

Mr. NOLAN. Testimony has been given before this committee that scientific management contemplates finding places for the man who are not found efficient for the task at which he has been working—they generally try to find some place in the establishment where he can fit in. Did your committee find any evidence to substantiate that statement?

Mr. FREY. We found nothing of that kind in practice, Mr. Congressman. We further found that the very opposite prevailed, and that the so-called theory of selection for the job was wholly set aside in practice, and that the workers' selection went about as far as seeing if he could perform the work under the time set on that one job, and keeping him there.

Mr. NOLAN. If he was found inefficient for that job, did you find any evidence to show that as a general proposition they sought some other place in that establishment where he could fit in?

Mr. FREY. No, sir; as a general proposition he was dropped from the pay roll.

Mr. NOLAN. Some statement was made as to the Ford shop. Have you ever visited the Ford shop?

Mr. FREY. No, sir; because none of the scientific management men claim that scientific management, as a system, had been introduced there.

Mr. NOLAN. Do you know whether a stop watch is used in the Ford establishment?

Mr. FREY. I could not say.

SCIENTIFIC MANAGEMENT AND LABOR.

[By JOHN P. FREY, editor International Molders' Journal.]

A few years ago there was introduced in several industrial establishments a system of management which was radically different in many of its features from any that had preceded it, and which its advocates announced was revolutionary in its results. The system was called "scientific management."

Claiming that the system had been developed as the result of thoroughgoing and scientific research and investigation by highly trained industrial and mechanical experts, its advocates held that when applied to industry it would eliminate economic waste by systematizing and standardizing the elements of production. It was asserted that it would make the workers more efficient through the special instructions and training it provided for, that it would safeguard them from injustice and the arbitrariness of employers and foremen, protect them from overexertion and provide for higher wages than had previously been paid, and furthermore that it would eliminate industrial strife.

Owing to its application in part in Government arsenals, and a strike by the union molders against some of its features as they were introduced in the foundry at the Watertown Arsenal, "scientific management" received much publicity.

The House of Representatives appointed a committee, consisting of Congressmen William B. Wilson, William C. Redfield, and John Q. Tilson, to investigate the system as it had been applied in the Watertown Arsenal. In its report to Congress this committee sustained labor's contention that the system forced abnormally high speed upon workmen, that its disciplinary features were arbitrary and harsh, and that the use of a stop watch and the payment of a bonus were injurious to the worker's manhood and welfare. At a succeeding session of Congress a measure was passed which prohibited the further use of the stop watch and the payment of a premium or bonus to workmen in Government establishments.

When the Federal Commission on Industrial Relations began its work it was decided that a further investigation of "scientific management" should be made, and Mr. Robert F. Hoxie, professor of economics at the University of Chicago, was selected to undertake the work. The commission was fortunate in securing a man of Mr. Hoxie's caliber and training. For many years he had made a secialty of industrial problems, and was familiar through personal contact and association with the viewpoint, mental attitude, and ideals of employers and workmen, organized and unorganized. Throughout the investigation he was treading on familiar ground, insofar as the principal problems which have arisen in our industries between the workers and the employers were concerned.

Mr. Hoxie was to devote a year to his investigation, and, as a part of this was to include a personal examination of a number of industrial plants which had applied the methods and principles of "scientific management," it was deemed advisable that he should be accompanied by two men whose training qualified them to act as expert assistants in calling attention to the actual conditions which would be encountered in these establishments, and their implications.

One of those appointed was Mr. Robert G. Valentine, ex-Indian Commissioner, and by profession an industrial counselor, who, during recent years, had devoted most of his time to the development of the personnel features in large establishments. The question of Mr. Valentine's selection was referred to some of the leaders of "scientific management" before his appointment was confirmed by the Commission on Industrial Relations.

The other expert was to be a trade-unionist, and I was honored with the appointment.

The report which Mr. Hoxie submitted to the Commission on Industrial Relations was prepared after some 35 industrial establishments had been investigated and interviews had been held with a much larger number of individuals connected with the management side, including such leaders of "scientific management" systems as Mr. Frederick W. Taylor, Mr. Harrington Emerson, and Mr. H. L. Gantt. Workers, organized and unorganized, and trade-union officials were also questioned.

In connection with this report it should be said that from the day that the chief investigator and his two assistants met to take up the field work there were daily conferences whenever they had jointly visited a plant, at which all information secured was discussed and an earnest effort made to give the proper weight and value to the sometimes conflicting statements of workers and employers which were secured in the establishments investigated.

The investigators were impressed with the conviction that their work was not to compare one theory of management with another or to investigate the theoretical postulates of "scientific management," but rather to discover the actual conditions affecting labor which existed in industrial establishments where the "system" was being applied and in operation. It was an investigation of "scientific management" as it affected labor, directly and indirectly.

The report which was finally prepared by Mr. Hoxie, after consultation with his two assistants, was subjected to their criticisms and suggestions until finally a common agreement was reached, so that when it was presented to the Commission on Industrial Relations it had attached the signatures of the three who were in agreement with its contents.

It is necessary before referring to the facts which were developed by the investigation to indicate the prelimnary work which was done by Mr. Hoxie previous to the field investigations, for the lines along which the investigation was carried on were determined almost wholly by the results of this preliminary determination of the points upon which it was necessary to secure information.

From the day that "scientific management" was given publicity, positive claims as to its great value to labor were made by its advocates, while as emphatic charges that its methods and practices were injurious to the workers were made by trade-unionists. Some of these statements were contained in books, magazine articles, and public addresses, while many of them were incorporated in the congressional hearings which had been held and the testimony given before the Commission on Industrial Relations in the early part of 1914.

These records were examined, and from them approximately 100 separate features of "scientific management" were secured which, its leading advocates claimed, were beneficial to labor. Practically an equal number of separate charges were made by trade-unionists against the system. This examination of the record, supplemented by personal interviews with leaders of both groups, supplied two lists, one containing the labor claims of "scientific management" and the other the charges against it made by the trade-unions.

Such lists, however, were liable to have their accuracy challenged, and to prevent such an issue from being raised afterwards they were submitted to high authority for revision and correction.

The list of the labor claims of "scientific management" was submitted to Mr. Frederick W. Taylor, Mr. Harrington Emerson, and Mr. H. L. Gantt, and others, and as the Taylor and Emerson systems differ in some respects their respective modifications or statements were separately recorded. The final result, however, was a list of the labor claims of "scientific management" which had the stamp of accuracy and completeness placed upon it by the recognized leaders of the cult.

The list of labor's charges against "scientific management" was brought to the attention of the executive council of the American Federation of Labor by Mr. Hoxie during the Philadelphia convention of that organization in 1914, with the request that a committee should be appointed to examine the list, with the object of making such modifications, additions, or corrections as would be necessary to have it embody the trade-union viewpoint. A committee was appointed for this purpose, and afterwards the list of labor's charges was carefully gone over by President Gompers, First Vice President Duncan, and Secretary Morrison. This list contained some charges which had been made by individuals, with perhaps insufficient evidence to prove their accuracy, but inasmuch as they had been made publicly they were allowed to stand.

There were, therefore, two lists of statements, both of which had been given the highest indorsement as to their accuracy which it was possible to obtain. With these two lists before him Mr. Hoxie prepared a list of the vital points of difference between them.

It was apparent that if the facts were to be acquired, detailed instead of general information would have to be secured, and that this might be systematically gathered a questionnaire was prepared, containing approximately 700 questions, the great majority so framed as to call for detailed information, and few permitting of a simple affirmative or negative answer. The questionnaire formed the foundation of the investigation, this being supplemented by the material gathered through personal investigations of plants where production under "scientific management" was being carried on.

Mr. Valentine and I assisted Mr. Hoxie in the final revision of the questionnaire, and when this had left the printer's hand the field work was undertaken, with the object of securing such evidence as could be found which would justify either the labor claims made for "scientific management" or the charges made against it.

The plants where the investigations were made were representative establishments or those recommended or suggested by Mr. Taylor, Mr. Gantt, or Mr. Emerson as those in which the standard methods of "scientific management" had been applied. These shops, therefore, afforded the most satisfactory field for studying "scientific management" at its best which could be secured. The plants visited covered a wide range of production, from cloth weaving, garment making, and the manufacture of large machinery to printing establishments, shops operated largely by semiautomatic and automatic machinery, departments where hand labor rather than machinery was required, and a Government arsenal.

The term "scientific management" was originally applied to the system of shop management which had been developed by Mr. Frederick W. Taylor. At present it is popularly used to designate any one of the several systems of shop management which embody in part certain of the prominent features which were first introduced by Mr. Taylor.

While all of the systems of "scientific management" have certain features in common, they also contain elements of difference, both as to their structure and the method of their application. It is, therefore, difficult to define "scientific management" in a manner which would satisfy all of the leaders of the several systems now in operation; for all general purposes it may be said that the term designates any of the systems of shop management which claim to secure greater productive efficiency through the systematic standardization of the elements of production.

A common feature of these systems is the planning out of the work by specialists so that it may be most economically handled and routed through the shop, the grouping of machinery and its operation at full capacity, the time and motion study of all mechanical and manual movements, so that the machines' possibilities and the workers' manual capacity can be analyzed into their minute elements from which the task to be accomplished can be defined and fixed, and the stimulation of the worker through the payment of a bonus or premium, so that the task set will be accomplished.

The investigation which was made indiciated that no plant had as yet applied all of the features of any of the systems to the establishment as a whole, and that practically every employer had made modifications of whatever part of the system had been introduced.

To illustrate the divergence found, the forms of wage payments may be taken. Originally there were three most prominently known, the premium, the task, and bonus, and the differential piecework. These may be termed basic forms, but some 25 or more variations of these were found to be in practice. Wide variations were also found in the manner of making time studies, and in the rules by which the worker's task was to be determined. It was also found that the same system, installed by the same efficiency engineer, would produce varying results in different plants, as far as the workers were concerned, each general manager modifying or altering the application of the system according to his temperament, viewpoint, and his knowledge of the human problems created by modern industry.

The several systems of "scientific management" and their variations which were observed in actual operation were installed by efficiency experts or mangers, whose names are prominent in the "scientific management" group, and no time was devoted to an examination of shops where "systems" had been installed by any of the charlatans and fakers who, during recent years, have reaped a rich harvest owing to the employers' avariciousness or credulity. We were informed by the leaders in the established "scientific management" group that the number of charlatans and imposters far outnumbered those who were truly qualified as efficiency engineers and had secured a recognized standing among business men. These quacks, they held, were largely responsible for much of the disrepute in which "scientific management" is held by many employers and workers. Referring to them one eminent efficiency engineer said:

"At the present time there is a great dearth of men who are qualified by experience, training, and temperament to establish in industry the principles of 'scientific management' and to develop a proper mechanism for the application of these principles. There are also some of these men who are perfectly sincere and honest in their efforts and do not realize their shortcomings or lack of qualifications. Others have regarded so-called efficiency engineering as a means of earning an easier living and making more money than they would otherwise be able to do in other fields."

Another equally as well known efficiency engineer said:

"One trouble is that there are a large number of fakers installing systems under the guise of 'scientific management,' and it is because of what they have done that workmen have just cause for complaint."

One expert informed us that "there were more fake engineers in 'scientific management' than in any other line," while one of the most prominent leaders said that the reason the competent efficiency experts had not succeeded in exposing all of the fakers and imposters was that these quacks outnumbered them 5 to 1.

No effort was made to discover how many fakers there were professing to introduce "scientific management," but from the statements made to us it would seem that there are a large number. Upon this subject the Hoxie report says:

"'Scientific management' as a movement is cursed with fakers. The great rewards which a few leaders in the movement have secured for their services have brought into the field a crowd of industrial patent medicine men. The way is open to all. No standards or requirements, private or public, have been developed by the application of which the goats can be separated from the sheep. Employers have thus far proved credulous. Almost anyone can show the average manufacturing concern where it can make some improvements in its methods. So that 'scientific management' shingles have gone up all over the country, the fakers have gone into the shops, and in the name of 'scientific management' have reaped temporary gains to the detriment of the real article, the employers and the workers.

"Just who these fake 'scientific management' experts and time-study men are it is impossible to tell, since no recognized standards of judgment exist. Accusations, indeed, are plentiful, but your investigator would not be warranted in repeating these. What proportion of the numerous failures of so-called 'scientific management,' of the positive errors and evils of time study, task setting and rate making in shops under this name are due to the work of these fakers is another matter on which no judgment can be passed, though scientific managers have variously estimated the fakers as four out of five, or nine out of ten. The certainty is that this element exists; that its representatives apparently can not be clearly distinguished and set off under existing circumstances from the more legitimate 'scientific management' practitioners; that the legitimate 'scientific management' group seems powerless to eliminate or control it; and that it exposes employers and workers to the losses and injustices of crude and inaccurate industrial tinkering—all in the name of 'scientific management' and under the protection of its promises and claims."

The quacks' work, however, was not investigated. The facts which were gathered, the impressions which were secured, and the tendencies which were observed were all acquired through the investigation of plants in which "scientific management" had been introduced by well known efficiency experts or managers.

The methods of introducing the systems varied according to the men, some going about their work in a diplomatic manner, others jamming it through with apparently little, if any, regard for the workers.

The president of one of the largest establishments told us that ———'s system of "scientific management" was without human element, and that the trade-unionists were not to be blamed for fighting it because of the language which he had used in connection with labor.

"If," he said, "I had introduced 'scientific management' in the literal way in which ——— interprets it, I would have had a revolution on my hands, and the workmen would have been no good if they had not revolted."

From information secured it would appear that "scientific management" in its genesis gave but little, if any, consideration to the workers' rights and welfare, but confined itself closely to the problem of reducing the cost of production. When the system was first established it was largely applied to plants which had proved unprofitable through faulty management, with the purpose of again making them profit-making concerns, the efficiency engineer having charge of its introduction receiving his recompense only after the plants were able to again pay dividends.

It would seem that the workers' welfare and his status as a human being, a mechanic and a citizen, did not receive much consideration until labor had rebelled against the system and directed attention to many of its features which affected labor injuriously.

TIME AND MOTION STUDIES.

"Time and motion study," said Mr. F. W. Taylor, "is the accurate, scientific method by which the great mass of laws governing the best and easiest and most productive movements of men are investigated. These laws constitute a great code, which for the first time in industry completely controls the acts of the management as well as those of the workmen. They substitute exact knowledge for prejudiced opinion and force in determining all the conditions of work and pay."

Time and motion studies are made with the assistance of split-second watches, which enable the time and motion study men to time all motions, and from the analysis of the records thus secured and the study of the motions to determine the time in which the work should be performed and the motions by which this is to be done. These studies are also made for the purpose of determining the most economical manner of doing the work.

Many of these time studies are exceedingly minute, some of the workmen's instruction cards showing as small an allowance as one hundredth of a minute for the performance of a part of the work and make such fine distinctions as the allowance of two hundredths of a minute for laying down a wrench, while three hundredths are allowed for picking it up, as shown in the reproduction given from an instruction card for operation.

Instruction card for operation.

	Time allowed in hundredths of a minute.
Put piece on arbor	0.15
Pick up wrench	.03
Tighten expansion arbor	.15
Lay down wrench	.02
Run carriage up and set pointer at 0	.16
Put tool in post and set in center of pulley	.79
Put piece on stud and fasten	.24
Start machine	.02
Set tool for turning and throw in feed	.18
Turn outside diameter 2-inch run	1.64
Throw out feed	.01
Face inside and outside diameter of flange	.82
Stop machine	.14

Much has been said about the scientific accuracy of time studies, for the efficiency engineers realized that unless the stamp of accuracy was placed upon time studies and the tasks for workers to perform which were set as a result the scientific character of their theory and its results when applied would be successfully challenged.

At the beginning of the investigation it was apparent that scientific accuracy in the timing of work and the setting of a task was an impossibility owing to the large amount of judgment which was required on the time-study men's part. The number of time studies to be made on a job before the task was set were determined by the time-study man, with no other rule to guide him but his judgment. His judgment also determined how many of the workers should be studied in connection with a job, the type of workers to be selected—that is, whether slow, average, or speedy, whether they were working normally while he was timing them, and the allowances he would make for fatigue and the other human factors. When these elementary time studies were analyzed it was the time-study man's judgment which determined how many of the longest or shortest times would be thrown out and the groups of times to be selected from which to strike an average or whether the minimum times should be the ones chosen. In almost every establishment a different basis or rule for determining the times to be selected from which the task would be determined was found to be in operation. One time-study man who was asked why he followed a certain rule in analyzing his time studies naively informed us that he did not know how the rule was determined, but he "guessed that the rule had been constructed so as to get the results which its inventor wanted."

As the Hoxie report contains a thorough examination and analysis of the time and motion study methods found in operation no effort will be made to go deeply into the question. Some of the conditions which were encountered, however, will be related.

Workers were found who expressed no objection to having time studies made on them, while others were strongly opposed to having a man stand over them with a split-second watch in his hand.

In one plant, where time studies were being made for our benefit, it was found that there were wide variations as well as apparent errors in the figures which the time-study man had entered upon his elementary time sheet. Upon his attention being called to this he said: "I generally come much closer to the average figures, but I knew that you were watching me while I was making the study and it made me nervous." The same man had previously assured us that it did not make the workmen nervous when he was making time studies of their work.

As was the case with many other features of "scientific management," it was found that the results of time and motion studies varied widely in different establishments, and that other factors aside from the records secured by time and motion studies influenced the task setter in making the task easy or difficult of accomplishment.

At one plant in which the tasks were set by one of the most widely known efficiency engineers it was found that he had set these so liberally in one of the departments that the workers were earning more than the firm was willing they should, with the result that some time after the engineer had finished the installation of his system in some of the other departments the firm refused to allow the system to continue, and returned to the former methods of regulating the day's work and day's pay. This resulted in a lowering of the earnings to their former level in the department referred to and a strike was narrowly averted.

At another plant, where a most prominent efficiency engineer had introduced parts of the system and set the tasks, it was found that he had set them so high, had made them so difficult of achievement, that the workers could not accomplish them. It became necessary to revise all of these tasks and liberalize them in order to retain their employees.

Another establishment afforded an insight into some of the motives which entered into the setting of the tasks, making them difficult or easy of accomplishment.

The plant was a large one, with many departments, covering in some cases work largely of a similar character. In the one which had been placed under "scientific management" the task and bonus system of payment prevailed, while in another which had not been time studied and standardized the old-fashioned piece-rate system prevailed. This plant had been frequently referred to by others as an example of the benefits of "scientific management" to the workers, for it was claimed that under the piecework system the workers worked harder and received less wages than in the department where "scientific management" had been installed. Our investigation proved this to be a fact, for unquestionably the workers in the "scientific-management" department were working with less evidence of feverish haste than in the piecework department, and their earnings were greater.

A careful investigation, however, indicated that these surface indications were misleading. When the corporation determined to install "scientific management" in this particular plant they were informed by the efficiency engineer that there was a strong prejudice against the system among the workers, which it would be necessary to overcome before it could be successfully installed in all of the departments.

As a first step he increased the hourly rate 2 cents in this department, installing with it a task and bonus system, which when the task was accomplished gave the workers about a 20 per cent addition to their hourly wage rate. The tasks were so set that practically every worker could accomplish them without undue exertion, the result being that at the time we visited the plant they were working more easily and receiving higher earnings than the pieceworkers. We found, however, that the cost of production in this department was higher than in the piecework departments, and that this was the principal reason why it had not been installed in them.

This was an instance where the workers wanted "scientific management," preferring it to day or piecework, and under these circumstances it was not surprising.

There remains another condition in connection with this situation which must be referred to. Within a few miles the same corporation had another large plant, and here the manager, using such information as could be secured relative to the mechanisms of "scientific management," was installing the system. Here, however, none of the tasks were easy of accomplishment, and no advance in the hourly wage was being given. The workers were rebelling against the conditions being forced upon them, while the superintendent of the department where the system had first been installed complained of what the manager in the other plant was doing, saying that it looked as though he was trying to show him up.

Under such circumstances, and with one manager pitted against another, it is evident that something far stronger than the fair promises and assurances of "scientific management" must be at the workers' disposal to protect them from abuses, speeding up, and poor pay.

In practice it was frequently found that where more than one job was given to a worker the task set, or the standard of achievement, was much more difficult of accomplishment in some cases than in others. If the tasks were set with scientific accuracy, it would be expected that the normally competent worker would achieve the task approximately 100 per cent of the time, or, to use the technical language of "scientific management," "that this efficiency in accomplishing his work would be 100 per cent." If the recorded efficiency of individual workers on various jobs indicated a wide variation, then it is but natural to assume that the variations were due to the inaccuracies of the task time set for the several jobs.

An interesting and most valuable analysis of variations of output by the same workmen under "scientific management" has been made by Mr. Miner Chipman, and we give the following figures from the study which he made of the conditions existing at the Watertown Arsenal after the system had been introduced.

The analysis of the men's output or so-called efficiency covered a period of one month, which makes it well representative of the unevenness with which the tasks had been set.

For the month of March, 1914, employee No. 2518 worked on 224 jobs. His average efficiency was 121.35 per cent, but his efficiency on these jobs varied from 21 to 200 per cent.

In September, 1913, employee No. 2681 worked on 91 jobs. His average efficiency was 96 per cent, but his efficiency on the several jobs varied from 39.3 to 149 per cent.

Employee No. 2518 worked on 140 jobs during April, 1914. He was a most competent workman, as his average efficiency for the month was 121 per cent. His efficiency on the several jobs ranged from 45 to 172.9 per cent, these variations indicating largely the too short or too long time which had been set on the jobs by the time-study and task-setting man.

Commenting on these figures, Mr. Chipman said in his report:

"Mr. Taylor, in his 'Shop management,' emphasizes 'that this system rests upon an accurate and scientific study of unit times,' which is by far the most important element in 'scientific management.' He also says that time studies made by this method determine with scientific accuracy 'the quickest time that can be made by a first-class man' and to the effect that this 'quickest time' or 'standard times' is so set that it can not be bettered.

"What can be thought of the times set on these jobs, when this workman on the 224 jobs of one month showed a range of efficiency (efficiency being the ratio of time taken to time allowed) from 21 to 200 per cent, with an average of 121 per cent, and the following month on 140 jobs a range of from 45 to 173 per cent, also with an average of 121 per cent?

"This workman may be rated as consistently of high efficiency. Why, then, this extreme variation in efficiency unless the time allowed for each job was not set accurately and scientifically? Can we assume that the worker varied in efficiency to the extent shown by the chart? We do not believe so. The variation is one of time setting or inaccuracy of time study.

"Of the 244 jobs in the first month the time on 13 jobs was correct, efficiency 100 per cent; on the remaining 211 jobs the time varied 2,755 minutes, or 22.2 per cent from a total standard time of 12,935 minutes.

"A study of the various jobs indicates that the variations in efficiency are due in part to the time-study man and in part to changes in conditions affecting work."

On two jobs in the foundry examined by the writer a difference of 2 hours and 30 minutes had been set, though at the outmost there could not have been more than 10 minutes' difference in the time to make the molds, as the patterns were almost identical and were made in the same flask, the only apparent difference being that a longer hub on one of the patterns required aboue 2 inches more sand in the drag.

An interesting case, through which the worker was forced to suffer because of the error made in setting the time for the task, occurred in one of the machine shops visited.

A machinist was given eight crossheads to finish, 44 minutes being allowed for the finishing of each crosshead. As this machinist took considerably more time, he was punished for his failure to accomplish the task by being laid off for 30 days.

During this period a more careful investigation was made of the job, and it was afterwards given to another machinist, who received a rate of 3 cents less per hour. The time allowed for the finishing of the task was increased 120 per cent, and although the machinist working on the job had a rate 3 cents less per hour than the other, it increased the cost of production 78 per cent. The machinist who was disciplined, however, was not allowed anything for the unjust punishment which had been meted out.

It would be possible to go on almost indefinitely in submitting evidence to prove that the time set on jobs by time-study men and task setters in shops where "scientific management" has been applied has been anything but scientifically accurate. While in theory it should have been, what the workers are directly interested in is what occurs when application of a theory is turned over to employers and placed in practice. It is the practice and not the theory which most vitally affects the workers.

While in theory the time allowed for the performance of a task or job is scientifically accurate, if it has been set as the result of time and motion studies, it was evident to the efficiency engineers that mistakes would be made, and that these would cause dissatisfaction among the workers.

To give them confidence that they would have no unfair advantage taken of them, "scientific management" laid down a principle upon which it has placed the greatest emphasis. This is that once a time or standard had been set for the performance of labor it would not be changed no matter how favorable it might be to labor. This principle is iterated and reiterated throughout the literature of "scientific management."

As far as our investigations were able to discover, this rule generally obtains in practice, though managers were found who repudiated it, holding that when the task had been set too liberally the workers knew it, and that as all errors, particularly those which the workers are aware of, should be immediately acknowledged and corrected, it was unwise not to change the time on the job; in fact, that this was necessary if the firm's intelligence was to receive the workers' respect.

It should not be inferred, however, that once a too liberal time has been set on a job or task it remains thus forever. A slight change of the design, a subdivision of the operation, or some other minor change readily gives opportunity for new time and motion studies, through which the error can be corrected.

Naturally, the question arises as to what follows when too short a time has been set. No comprehensive answer can be given, for neither trade unionism nor any other manner of collecting the workers' grievances exists in plants applying the system, with perhaps one exception.

In practice, when workers complain that insufficient time has been allowed on a piece of work they are shown the sheets upon which the time-study man has entered the split-second watch records and are told that here are figures which show what was done and that no one can go behind these, or it is demonstrated to them that the task can be done in the time set by the time-study man or by some selected workman.

In one establishment a time of 5 hours and 24 minutes had been set for the performance of a task. As it required something over 38 hours to accomplish it, the responsibility for the error was left for the time-study men and the planning room to fight out, but the question of what would happen if the error had been less glaring and how often these errors were made was one which, if answered, would throw more light upon what occurs when the task set places too great a strain upon the worker without harassing him enough to cause open rebellion.

APPRENTICESHIP.

"Scientific management" makes no provision for apprenticeship. In one plant a definite apprenticeship system, which aimed to develop competent craftsmen, was in operation for a limited number of boys, but apparently this exception was due to one individual in the firm who still retained the conviction that thoroughly trained mechanics would still be required by the industries at least for some years.

What was called an apprenticeship was in operation in a few of the plants, but the training being given was not for the development of craftsmen, but rather to instruct a few bright young men for positions in the directing staff.

Both in theory and in general practice "scientific management" abandons the method of apprenticeship for the purpose of craft and manual training and endeavors to substitute in its place specialization and standardization.

Not only do many of the efficiency engineers hold that apprenticeship for the training of craftsmen is not longer necessary, as their system provides for production without all-round craftsmen, but in more than one instance the thought was brought out that training apprentices was expensive and did not bring practical results for the outlay of time and wages; that where a thoroughly trained mechanic was necessary it was advisable to go into the open market and secure craftsmen who had been trained in other plants.

An example of this viewpoint is supplied by the following statement, made to us by an expert in one of the plants:

"We can not take a man under apprenticeship and let him do different things for four years and then pay him $21 per week. We must put him on one job and keep him on one job.

"There are some boys and girls in the composing rooms, and I would like to teach them to become printers, keyboarders, proof readers, make-up men, stone men, and teach them two or three phases of the business, but I have the threat in the back of my head that at the end of four years I must make them earn $21 a week, and I can go at the end of the four years and get a much better workman for the money, so I must keep them on one job."

SPECIALIZATION AND STANDARDIZATION OF LABOR.

In referring to the specialization which occurs under "scientific management" and the forms of instructions for workers which exist, the Hoxie report says:

"Once within the shop, 'scientific management,' according to the claims made by Mr. Taylor, solves completely the vexing problem of the adaptation and adequate training of the workers. It sets 'each man to the highest task for which his physical and intellectual capacity fits him,' 'employs in the shop a corps of competent specialists whose duty it is to instruct and train the workers and to assist them whenever difficulties arise in connection with the work,' 'systematically transmits' to them 'all the traditional craft knowledge and skill which is being lost and destroyed under current industrial methods,' 'requires workmen to learn and to perform not one merely but several operations or tasks,' and 'educates and trains them mechanically as they were never trained before.' In short, it constitutes a 'practical system of vocational guidance and training,' making possible the 'mutual adaptation of the task and the worker,' and opening the way 'for all workmen to become first-class men.'"

After describing the conditions which were found in practice, the Hoxie report asserts that "The theoretical transmission to the workers 'of all the traditional craft knowledge which is being lost and destroyed under current industrial methods' amounts in practice to the transmission to the individual of the knowledge required for the particular narrow job."

In general the managers of shops where the system was in operation held that they preferred the one-job or one-machine man to the thoroughly trained mechanic. On more than one occasion I asked the managers of machine shops the following question: "If you needed a machinist to operate a lathe and two men applied for the position, both of an equally promising appearance, but one only claiming to be a lathe hand while the other claimed to be equally competent to operate a planer and a boring mill, which would be hired?" The almost invariable answer was, "We would employ the man who could only operate a lathe, for he would be a specialist." This point of view was expressed by the manager of one large plant while explaining his attitude towards apprenticeship and specialization.

"Where you manufacture," he said, "you must specialize. We decidedly do not have the facilities here for making first-class all-round mechanics. A specialist is of value to the company and we compensate him. There is so much more intensification in every field that we prefer a specialist to an all-round mechanic."

Another manager of a large establishment said to us: "The worker under the present specialized system is as well off as under the old, but the old skilled workman is no longer required," and after a short pause he added: "The trouble is that the workers to-day are not as ambitious as they should be under the conditions."

What ambitions could be gratified by feeding the same shape of metal into a machine for days, weeks, and months, or in screwing on nut 47 or 73 on an automobile, with no opportunity of rising in the scale as a craftsman, must be left to a Münsterberg to discover.

In practice "scientific management" seeks continually to specialize and subdivide the work so that the worker performs but a minute part of the work formerly done by a craftsman and required to complete a product.

In one of the foundries visited five men were employed on various parts of the same small mold which formerly had been made in its entirety by one molder.

In a garment-manufacturing establishment the manager informed us that previously there had been 25 operations to complete a pair of trousers, but now there were 75; that under the old system there were about 50 separate operations in the making of a coat, but that under "scientific management" this had been increased to 150. Even in the pressing of the clothes the pressers no longer pressed the entire suit, but only some of the parts.

Going through one large establishment we stopped before a girl who was taking threads previously cut to a certain length, threading these into a needle, and then waxing the thread. The firm's expert informed us that previous to the installation of "scientific management" each girl had threaded her own needle, cutting off the threads in lengths to suit herself.

The method of "scientific management," however, had shown this to be all wrong, for if a girl cut the threads too short she had to thread her needle too often, which was a waste of time, while if she cut the thread too long she lost much time taking the long draws necessary until the thread became shorter. The girls sewing on buttons were therefore given different lengths of thread, and a careful record was kept of the number of buttons each girl sewed on per day, and when the length of thread which enabled the girls to sew on the largest number of buttons per day was secured through analyzing the results, this length of thread was made the standard. Based on the theory that a girl trained to thread needles could do this more efficiently than anyone else, one girl spent much of her time threading needles with the standard length of thread, this being one subdivision of the trade of sewing on buttons.

However, from a "scientific" standpoint this was but a clumsy and slipshod result of an analysis of the "sewing on of buttons" trade, as we soon discovered, for in another garment-making establishment they had studied this trade with a more searching spirit. If the length of thread with which the needle was threaded determined the number of buttons a girl could sew on in a day, then the length of her arms would also be a factor, for the girl with long arms would take a longer draw after putting the needle through the cloth and the button than the girl with short arms.

Once this "scientific" fact was discovered, the experts made elaborate studies of the problem, girls with short, medium, or long arms working with standard lengths of thread being watched and the results of their day's output analyzed. As a result of these studies it was possible for the experts to discover the proper length of arm to enable a girl to sew on the largest number of buttons, and the employing department was instructed to supply the button-sewing department with girls whose arms were of the desired length. But even this was not scientifically thoroughgoing, for it was found that the length of the fingers undoubtedly had an influence, and studies were made to determine what the most efficient length of fingers was, so that the girls in this department who were being specialized as button sewers would all have fingers and arms of the same length. So in time the firm had a group of girls sewing on buttons with standardized lengths of thread with their standard fingers and arms.

Here was the perfection of "scientific management!"

But human nature or human qualities and characteristics are prone to upset the rigid rules of mechanical motions when these are applied to them.

It was not long before the experts, who had studied for many weary days with stop watches and pondered deeply over huge masses of the time studies they had accumulated, discovered that though they had standardized the length of thread and the length of fingers and arms which were to sew on buttons with the thread, there was still a wide difference between the girls' output.

What the efficiency experts had failed to standardize, what as a matter of fact they could not standardize, were the physical and mental qualities of the workers, their vitality, their ambitions, their nervous coordination, their ability to work without physical, nervous and mental deterioration under the monotonous character of their work.

In the end, in the latter plant, standard lengths of thread, or of fingers, or of arms, were discarded, and each girl was permitted to cut the length of the thread to suit herself, with the result that the unstandardized girls were apparently enjoying better health, were less rushed, and were doing better for themselves and their employers than their standardized sisters.

There may have been a modicum of scientific research, coupled with other objects, which led to the original time and motion studies resulting in the standardizing of the length of thread, fingers, and arms in the trade of sewing on buttons, but the welfare of the girls, the desire to teach them to become competent garment workers, was certainly not the prime motive.

A result of this specializing and subdividing of the work is the employment of workers of less craft knowledge and narrower manual skill, who for lower earnings replace the skilled workmen. One instance came under our observation where skilled workmen who had been employed for years by the firm and whose earnings were from $30 per week upwards were replaced by girls and women whose wages were less than half of that amount. These female workers each completed but a small part of the finished whole.

The extensive specialization which occurs could be illustrated by a barber shop, where one worker would attend to the hot water, another work up the lather, a third apply it to the face, a fourth do the shaving, a fifth the stropping of the razor, while still others would respectively wash, dry, and perfume the shavee's face. It is true that each of these workers might be termed a highly trained specialist, but such a narrow degree of craft or industrial knowledge would be of little practical value to him, to the community, or to the industries.

The detailed observatious of the workers' motions while at work, known as motion study, are carried on for two principal purposes.

The highly skilled workers are closely observed so that their manual motions and method of laying out and handling their work may be studied until a record of the most efficient method of doing each minute part of the job can be secured and analyzed.

The best way to pick up a tool, to use it, to handle the material and prepare it for the finished product, are determined by the time and motion study man and recorded. This enables him later on to take the work formerly requiring skilled workmen and subdivide it, giving the doing of one part of the job to one worker and another to someone else taken from the ranks of the lesser paid and taught to do the simple parts of the job to which they were assigned.

Through this careful study of every motion and method used by the skilled worker and its recording upon index cards, the employer in time acquires as personal property the craftman's skill and knowledge, and then doles this out to the lesser skilled and lower paid workers, who are then employed to supplant the skilled craftsmen formerly required.

This practice raises a most serious problem relative to which the Hoxie report says:

"There can be little doubt that 'Scientific management' tends in practice to weaken the power of the individual worker as against the employer, setting aside all questions of personal attitude and the particular opportunities and methods for voicing complaints and enforcing demands. As we have seen, it gathers up and transfers to the management the traditional craft knowledge and transmits this again to the workers only piecemeal as it is needed in the performance of the particular job or task. It tends in practice to confine each worker to a particular task or small cycle of tasks. It thus narrows his outlook and skill and the experience and training which are necessary to do the work. He is therefore easier of displacement. Moreover, the changing of methods and conditions of work and the setting of tasks by time-study with its assumption always of scientific accuracy put the individual worker at a disadvantage in any attempt to question the justice of the demands made upon him, and the assumed payment of wages in proportion to efficiency with the opportunities of exceptional reward held out if he will but make the task, tend to put upon him responsibility for wage results of which he complains.

There are no simple, definite, recognized and permanent standards of work and earnings to which he can appeal. The onus of proof is upon him and the standards of judgment are set up by the employer, covered by the mantle of scientific accuracy. The unskilled worker, especially, under 'Scientific management,' loses what little chance of success as an individual he may elsewhere have, in any contest with the employer, and 'Scientific management,' from the standpoint of competitive power, tends to relegate workers to the condition of the unskilled."

In addition to the gathering up of the craftsman's skill and transferring it to the employer's indexed records, motion study in practice is applied in instructing the worker so that no unnecessary motions will be made in connection with the work. The instructor with the motion study records at his disposal, plus the untrained worker, is expected to take the craftsman's place.

If the form of specialization which was found in operation in the great majority of plants visited could be applied to our industries as a whole, craft skill and knowledge among the workmen would disappear. The craft knowledge would become the employer's property in the same degree that his machinery is something personally owned, craft skill would also be the employer's possession, that particular part required for the performance of the work being given to the worker by instructors. The workers would have neither knowledge nor skill except that small and limited part which would be required to accomplish the simple portion of the work to which they were assigned.

The manager of one large establishment informed us that owing to the degree of specialization he had carried out it was possible for him to take untrained workers and instruct them so that in 10 or 15 days they could do the most of the work in the plant. Others infromed us that in a month or two, under their system, they could make fully competent operatives for the work in their establishments. In a word, the specialization and standardization of labor under "Scientific management" as we found it, provides no apprenticeship system for the training of craftsmen and assumes that the thoroughly trained mechanic is no longer required except in rare instances. It aims to replace the trained craftsmen with workers whose knowledge is limited to a few simple operations, and whose labor is directed by instructors.

If generally applied the craftsmen would pass out of existence, and the workers would become dependent for their existence upon the scanty and insignificant industrial knowledge and experience afforded them by their limited opportunities, regulated by those who, in addition to ownership of machinery, had also acquired possession of craft knowledge and the skilled workers' methods.

OVER-SPEEDING.

One of the strongly defended claims of "Scientific management" is that it prevents the workers from being over-speeded. Mr. F. W. Taylor held that:

"'Scientific management' seeks to eliminate over-stimulation, over-speeding, and nervous and physical exhaustion of the workers:

"By substituting exact knowledge, based upon a careful study of men and machines, for guess work in the setting of the task, and the determination of the hours and other conditions of work.

"By eliminating thus the need for the employment of pacemakers.

"By transferring from the workers to the management responsibility for contriving the best methods of work.

"By removing from each worker responsibility for the work of others and for the instruction of beginners and helpers.

"By maintaining the best conditions for performing the work through furnishing the best tools and materials at the proper time and place.

"By training the workers in the most economical and the easiest method of performing operations.

"By standardizing equipment and performance.

"By instituting rational rest periods and modes of recreation during working hours.

"By surrounding the workers with the safest and most sanitary shop environments."

As found in practice, "scientific management" presented a wide range of conditions from which to draw conclusions as to the claim that under this system overspeeding is prevented.

In no instance was it found that the philosophy of the shorter workday had influenced any efficiency engineer or employer to reduce the hours of labor, while one of the leaders of "scientific management" informed us that the workers could be employed 10 or 12 hours per day without any physical injury resulting.

In one or two plants systematic efforts had been made to prevent overspeeding, workers were advised not to endeavor to accomplish more than the task, and in one instance as a deterent workers were penalized through a sharp reduction in the sum allowed for the completion of the job. In general, however, the workers were encouraged to beat the task, through both the employer's policy and the foreman's efforts to secure their bonus, the winning of which depended upon the workers achieving the tasks.

Reference to what appears under the head of "time and motion studies" will indicate the unscientific, irregular character of much of the task setting, and the various influences which animate the task setter while engaged in his work. The reward received for reducing the cost of production, the employers' desire for speedy results, the temptation to make a better record than some other efficiency engineer or task setter, these and other motives operate to set the tasks so high that overexertion is necessary to accomplish them in many instances.

Nowhere was it found that fatigue studies had been made, which would be of value. In fact, no scientific study has yet been made of the subject of fatigue, or of the workers' long-time efficiency, and as no comprehensive studies of human fatigue have been made by scientists, there is no data upon the subject which would warrant anyone's speaking upon it with authority. But even if there were, the important questions would be the manner in which the knowledge of the subject would be applied to the workers and the degree to which it would safeguard them from overstrain. Upon this subject the Hoxie report says:

"A much more definite issue is brought up by Mr. Taylor's claim that 'scientific management' guards the workers against overspeeding and exhaustion through careful studies of fatigue and the setting of the task on the basis of a large number of performances, by men of different capacities and with due and scientific allowance for the human factor and legitimate delays. It has been pointed out already in the discussion of time study that tasks are set in all sorts of ways, with reference to the men chosen and the number of performances timed. There is no general rule. And it was also demonstrated that no scientific method had been developed for the making of human allowances, and that these are sometimes very liberal, but sometimes also unduly curtailed. It must be admitted on the other hand that 'scientific management' can and often does go far through the study of machinery and the careful observation of the ongoing process of production toward the establishment of proper allowance for legitimate delays, not connected directly with the human factor. When we come, however, to the matter of fatigue studies, and their connection with speeding and exhausion, Mr. Taylor's claim seems to break down completely. No actual fatigue studies were found taking place in the shops, and the time-study men employed, who should be charged with such studies, seemed, in general, to be quite indifferent or quite ignorant in regard to this whole matter. Fatigue studies apparently are not made when the tasks are set, and, if afterwards complaint is made, the classical method of dealing with the subject is to 'demonstrate' to the worker that the task can be done in the time set. Efforts to discover from 'scientific management' experts proper methods for studying fatigue brought out only vague replies. Were it not for certain examples cited in 'scientific management' texts, there would seem to be no ground for crediting it with any scientific aspirations in this connection. This does not mean that no attention to fatigue is given in 'scientific management' shops. Cases were found where the health and energy of the workers were carefully observed and attempts were made to adapt the work to their condition, but the methods employed were the rough and ready ones of common-sense observations."

While it is true that some efficiency engineers and employers have taken the element of fatigue into consideration with the object of preventing the worker's overexertion, it is equally as true that others aim to develop a system which will spur the workers to their limit. The speed competition attitude on the workers' part is developed through many clever methods. In one plant the workers were divided into small groups, each group having a high post near it upon which two large signs were hung, one showing the number of pieces the group must finish during the day to complete their task and the other the degree of progress they had made. These signs were so prominent that the workers in one group could see the figures upon all of the other signposts in the room. From time to time the speed bosses went from group to group, counting up the finished pieces, and then posting the total finished work, so that the several groups could race with each other, or, what really was the case, realize that they were pitted against each other. It is but natural to anticipate that under this method the several foremen would vie with each other and endeavor to have the workers under them the speediest, for the resulting favor from the office which this would bring. One efficiency expert was quite frank upon this phase of the subject, and in writing about the atmosphere of speeding up which had developed he said with to a molder working under his system:

"This same man asked to be told a day before the pattern went out of the sand, so that he and his gang could put up a record that no other gang could touch."

One instance showing the extent to which "efficiency experts" can develop methods of speeding the workers up to their physical and nervous limit made a permanent impression upon the investigators.

The plant employed the usual forms of time and motion study for the determination of what the task should be, and the workers were paid a bonus if they accomplished the task. For example, if the time set upon a task was one hour, the worker, if he finished the job in an hour, was credited with an hour and a quarter's pay, based upon his hourly wage rate; so that if this was 20 cents he would receive 25 cents for the hour's work.

This bonus was not considered sufficient to properly assist and stimulate the workers, so the foreman was also paid a bonus, this being based upon the number of worker under his charge who earned their full bonus. For the foreman's efficiency to reach 100 per cent it would be necessary for every worker in his gang to earn their bonus every hour of the working day. It was, therefore, to the foreman's interest to do all that lay in his power to see that every worker accomplished the task which had been set.

However, this was but a part of the scheme or system which aimed to get all of the work possible out of the workers, for another factor entered largely into the plan. The time-study man and task setter was also paid a bonus which was based upon the number of workers who failed to make their tasks, the task setter's efficiency reaching 100 per cent only when every worker in a group failed to finish their jobs in the time set for the accomplishment of their tasks. The time-study man was, therefore, paid a bonus to set the tasks so high that the workers could rarely, if ever, accomplish them, while the foreman was paid a bonus based upon the number of workers who could be prevailed upon to finish their jobs within the time set.

Under this system there were no rest periods or other provisions which would prevent the workers from being speeded up to their limit, but instead it became a contest between the time-study man and the foreman, the one depending for his extra wages upon setting the time so short for the finishing of the task that the workers could not make it, and the other only receiving his bonus when he succeeded in having the workers accomplish these tasks. It was a clear case of playing both ends against the middle, the middle in this case being the unfortunate worker.

In theory "scientific management" would protect the worker from overexertion; in such an instance as the one just referred to the practical application of the system deliberately and with human ingeniousness aimed to secure the worker's last ounce of energy.

Even where the system did not aim to drive the workers to extreme exertion there was frequently a total absence of any provision to allow the workers a rest or breathing spell. In one plant the workers had requested that they be allowed rest periods, and this had been denied. Some of the workers, desiring rest periods, had hurried up their work so that a few minutes of rest would be secured between tasks. The firm had notified the workers that this practice must cease, but the workers had persisted, and their determination was so evident that they were finally allowed to take rest moments. In this plant, which was operated by a man of high ideals in many ways, a condition was found in one department where, because of gang production, and the interruption in the gang process caused when one worker stopped, the women workers were practically unable to attend to human necessities during working hours. It is but fair to say that the general manager would not have tolerated the existence of such a condition had he known of it, for at heart he was a humanitarian. However, one of the very serious defects of "scientific management" is that it does not keep the manager informed of much that affects the workers, their rights, their welfare, and their desires.

Cumulative evidence was acquired during the investigation to prove labor's contention that "scientific management" in operation tends to speed up, that in many instances, workers under this system have been speeded up to their physical limit, and that as applied by many it is intended to accomplish this result.

INDUSTRIAL DEMOCRACY.

The controversy which centers about time study, task setting, and the methods of payment employed by "scientific management" is perhaps of secondary importance to the attitude of "scientific management" toward industrial democracy and its relation to the workers.

Mr. Taylor has claimed that—

"'Scientific management' is the essence of industrial democracy. It substitutes the rule of law for arbitrary decisions of foremen, employers, and the unions, and treats each worker as an independent personality; it transfers to the workers the traditional craft knowledge which is being lost and destroyed under current industrial methods; lessens the rigors of shop discipline; promotes a friendly feeling and relation between the management and the men, and among the workers of a shop or group; it gives a voice to both parties—to the workers in the end equal voice with the employer—and substitutes joint obedience to fact and laws for obedience to personal authority. No such democracy has ever existed in industries before.

Every protest of every workman must be handled by those on the management side and the right or wrong of the complaint must be settled, not by the opinion of either of the management or the workman, but by the great code of laws which have been developed and which must satisfy both sides; both can refer only to the arbitrament of science and fact. 'Scientific management' thus makes collective bargainings and trades unionism unnecessary as a means of protection to the workers, but it welcomes the cooperation of unionism."

Organized labor has declared that "scientific management" is essentially autocratic, a reversion to industrial autocracy which forces the workers to depend upon the employer's conception of fairness and justice and limits the democratic safeguards of the workers, that it tends to gather up and to transfer to the management all the traditional knowledge, the judgment, and the skill of the workers, and monopolizes their initiative and skill in connection with work; that it ordinarily allows the workmen no voice in hiring or discharging, the setting of the task, the determination of the wages or the general conditions of employment; that it greatly intensifies unnecessary managerial dictation and discipline; tends to prevent the presentation and denies the adequate consideration of grievances and tends to increase the number of shop offenses and the amount of docking and fining; it introduces the spirit of mutual suspicion and contest among the men, and thus destroys the solidarity and cooperative spirit of the group; it has refused to deal with the workers except as individuals; it is incompatible with and destructive to unionism; it destroys all the protective rules established by unionism; and, finally, it is incompatible with and destructive to collective bargaining.

Industrial democracy, as we understand it, is that condition in the industries which acknowledges and accepts the right of labor to a collective voice in determining what the terms of employment shall be and the conditions under which labor is to be performed. It gives practical application to the principle that government in the shop, like government in the Nation, should be by the consent of the governed.

It has not been my purpose to discuss the theory of "scientific management" as expounded by its leaders, but rather to call attention to the conditions affecting labor which were found to exist in plants where "scientific management" had been installed. It is essential, however, that attention should be called to industrial democracy as it is apparently understood and defined by those who apply the principles of "scientific management"; for, unless this is done, it would be impossible to understand the attitude which "scientific management" has assumed toward labor.

Mr. Taylor has held that the relations between employers and workers are governed by a fundamental harmony of interests. Assuming this to be true and that perfect equality of interests exists between them, complete democracy in all of their relations is to be secured by setting aside the employers' personal authority and the arbitrary rules and regulations of the workers, with all of the machinery for negotiations and the enforcement of decisions created by both, and substituting at all times the impersonal dictates of natural law and fact. It is the democracy of science as applied to industry. All that is necessary to realize this is to have in the shop a corps of scientists to determine and declare to employers and workers the objective scientific facts.

"If," as the Hoxie report says, "Mr. Taylor's original assumption is correct, and if all industrial matters touching the relations of employers and workmen have been or can be reduced to a purely scientific basis, his conception of industrial democracy is valid, and if it is adhered to by scientific managers generally, the worker has no need of unions, union machinery, or collective bargaining to voice his complaints and enforce his demands in order to secure just consideration of his interests and equal voice with the employers in the determination of all matters of mutual concern."

However, as a matter of fact, neither is the Taylor assumption correct, nor is it adhered to by scientific managers generally.

Theoretically, Mr. Taylor and other leaders of "scientific management" hold that the elements of the conditions of labor and the terms of employment can be demonstrated as objective scientific facts and are therefore no more subject to bargaining or abitration than the question of the earth's revolution on its axis or the principles of arithmetic. Perhaps no feature of "scientific management" indicates a wider divergence between a theory and its application than the one under consideration. As one efficiency expert said to me, after spending some time with him in investigating a plant where he had assisted in introducing the system: "All of this talk about 'scientific management' benefiting labor is b——. We have to use it for policy's sake. The employers are after the results, and what ——— and I are after is the money, for the financial results are the first consideration. When ——— undertakes to introduce the system in a plant, he makes the first studies and gives the foremen the first instructions, and this frequently makes trouble, and then I am brought in as a pacifier or soft soaper to follow up ——— and sling the salve. After this I take up the work of rate making and task setting."

This attitude was not exceptional, although it was sometimes expressed in choicer language. As one of the leading manufacturers said to us, "——— is a thinking machine of high order, and the system which he worked out is all right so long as he is not given any chance to apply it himself."

In one well-known establishment, Mr. Hoxie said to the manager: "Your conception of industrial democracy is the employer sitting as a just judge and handing down his opinion, based upon the facts and arguments presented to him." The reply was: "To a certain extent." Mr. Hoxie added: "Then the final decision must rest with some one who is not biased," and the reply was: "Not necessarily, but it must rest with some one who is not biased and who is in authority."

This manager held that the question of fatigue, the difficulty of accomplishing the task, was not a matter for bargaining or for negotiation with the employer, but was a matter for scientific determination. He believed that the minimum wage rate was also a matter for scientific determination, as well as the hours for labor, yet in this plant, where the tasks were set under the system, the workers who did not accomplish them were penalized by being demoted to a lower hourly wage rate, and the worker who did not fall into line with the many rules set up was disciplined in other ways, or eliminated.

Mr. Taylor's ideal shops with their corps of scientists and scientifically trained time-study men and instructors were not encountered during the investigation. It is true that systems of "scientific management" had been installed by efficiency engineers possessed of marked ability and wide experience, men of high ideals and not wanting in the milk of human kindness, but these men did not remain in charge of the plant to direct the machinery which they had installed, and this work was taken up by other and inferior men. It is the work of the time-study men which chiefly determines whether efficiency shall be combined with just and humane treatment of the workers, regardful of their present and future welfare.

"This being true," says the Hoxie report, "the time-study man is, from the standpoint of labor, the central figure in 'scientific management'—its vital organ and force. To perform his functions properly, to make 'scientific management' tolerable to labor, he must be a man exceptional in technical and industrial training, a man with a broad and sympathetic understanding of the workers as well as of the economic and social forces which condition their welfare, a man of unimpeachable judgment, governed by scientific rather than pecuniary considerations, and withal he must occupy a high and authoritative position in the management. For if he is to set tasks that will not cause nervous and physical exhaustion, he must not only have an intimate personal knowledge of the work to be done, the special difficulties it involves, the qualities required to do it well, the demand which it makes on strength, skill, ingenuity, and nervous force, but he must also be able to recognize and measure nervous disturbance and fatigue and understand and deal wisely with temperament. If he is to set tasks that will always be fair and liberal he must understand and know how to discount all the effects of current variations in machinery, tools, and materials, in human energy and attention. If he is to safeguard the lives and health of the workers and their general economic and social welfare he must be an expert in matters of sanitation and safety and have a broad and deep understanding of economic and social problems and forces; and, finally, if he is to make all this knowledge count he must be able to establish the standards warranted by his study and judicial weighing of men and facts and to protect these standards against infringement and displacement. All this and more, if the claims of 'scientific management' relative to labor are to be generally fulfilled.

"But as things actually are this emphatically is not the type of man who is habitually engaged in time-study work and who is being drawn into it; nor does the time-study man of the present occupy this exalted position in the hierarchy of 'scientific management.' The best men in this work are perhaps technically qualified, but so far as the observation of your investigator has gone the best of them are technicians with little knowledge of the subject of fatigue, little understanding of psychology and temperament, little understanding of the viewpoint and problems of the workers, and almost altogether lacking in knowledge of and interest in the broader economic and social aspects of working-class welfare. The bulk of the time-study men encountered were immature men drawn from the shop or from college. They were expected to get their knowledge and training in all the matters enumerated above through the actual work of time study and task setting. In the majority of cases encountered it was not considered essential that they should have had any special training in the particular industry. A man who had worked exclusively in the machine shop was considered competent after a few weeks or months of contact and trial experience to set tasks in a cotton mill. Sometimes previous industrial experience of any kind was not considered necessary. Analytical ability, good powers of observation, a sense of justice and tact were the chief qualities emphasized as essential for a good time-study man. Rarely, if ever, was anything said of technical knowledge concerning fatigue, psychology, sanitation, safety, and in broader problems of industrial and social welfare. Indeed, time study and task setting were almost universally looked upon as primarily mechanical tasks in which the ability to analyze jobs and manipulate figures, rather than broad knowledge and sound judgment, were regarded as the essential factors. Naturally, therefore, the time-study men were found to be prevailingly of the narrow-minded, mechanical type, poorly paid, and occupying the lowest positions in the managerial organization, if they could be said to belong at all to the managerial group. Nor does the situation seem to promise much improvement, for the position and pay accorded to time-study men generally are such as to preclude the drawing into this work of really competent men in the broader sense. Aside from a few notable exceptions in the shops and some men who make a general profession of time study in connection with the installation of 'scientific management,' this theoretically important functionary receives little more than good mechanic's wages and has little voice in determining shop policies. The start is often made at $15 per week. A good time-study man, according to current standards, can be had at from $75 to $100 a month, and $125 per month is rather a high rating for experienced men, if the statements of scientific managers are to be trusted. In fact, the time-study man who, if 'scientific management' is to make good the most important of its labor claims, should be among the most highly trained and influential officials in the shop, a scientist in viewpoint, a wise arbiter between employer and workmen, is in general a petty functionary, a specialist workman, a sort of clerk who has no voice in the councils of the higher officials. There are of course exceptions to this general rule, but taking the situation as a whole the quality of the time-study men actually setting the tasks in 'scientific-management' shops and the position which they occupy are such as to preclude any present possibility of the fulfillment of its labor claims."

There can be little doubt that "scientific management," as we found it applied, tends to weaken the power of the individual worker, as against the employer, setting aside all questions of personal attitude and the particular opportunity and methods for voicing the workers' complaints and enforcing their demands. It tends in practice to confine each worker to a particular task or operation, or the most limited number of these. It narrows the worker's outlook and limits his opportunity of acquiring skill and knowledge through experience, and limits his growth toward craftsmanship. The worker is, therefore, easier to displace. Personal interviews withs workers brought to light many instances of pressure, indicating how difficult, if not impossible, it was for them to act collectively under the systems. The individual workers were reluctant to call attention to work which had been poorly done by other workers, because it gave them the reputation of being cranks or faultfinders among the workers of their own and other groups and made them objects of unwelcomed attention on the part of the instructors, gang bosses, speed bosses, and time-study men. Most of the workers interviewed seemed to feel themselves helpless in the face of the machinery which the system had built up, and each one was endeavoring to protect himself only. Frequently the worker who is timed on the job is a pacemaker, and consciously such, which creates an attitude on the part of his fellow workers which can be readily understood. Where the task is set too high the workers complain that their predecessors skimp the work in their efforts to earn their bonus, and that much of this skimped work passes the inspectors during the process of production. Neither is favoritism eliminated, this being particularly true where the foreman is paid a bonus on the work done under him. A source of irritation was also found in the sudden jump in rates which takes place under some of these systems when the task has been accomplished. The worker who just misses the mark and, therefore, loses his bonus feels irritated when he sees other workers attaining their bonus, through some favoring circumstances or because they have succeeded in evading the inspector's vigilance, or because the time studies have not been thorough enough to make proper allowance for difference in the skill required or the materials used on the job.

Dealing with this subject the Hoxie report says:

"Beyond the question of irritation is that of the general effect of 'scientific management' methods on the motives and attitudes of the workers. Here the count seems to be decidedly in favor of the trade-union charges. Almost everything points to the strengthening of the individualistic motive and the weakening of group solidarity. Each worker is bent on the attainment of his individual task. He can not combine with his fellows to determine how much that task shall be. If the individual slows down, he merely lessens his wages and prejudices his standing without helping his neighbor. If he can beat the other fellow, he helps himself without affecting the other's task or pay. Assistance, unless the man is a paid instructor, is at personal cost. Special rewards, where offered, are for the individual. The chance of promotion is supposed to depend on the individual record. Rules of seniority are not recognized. Sometimes, personal rivalry is stimulated by the posting of individual records or classification of the workers by name into excellent, good, poor, etc. Potential groups are broken up by the constant changes in methods and reclassification of workers, which is the mission of time study. The whole gospel of 'scientific management' to the workers is to the individual, telling him how, by special efficiency, he can cut loose from the mass, and rise in wages and position to a man of consequence. Only by the welfare work outside the working hours is there anything done to bring the men together. But once seated at the bench or machine, they are so many individual atoms, each dependent on his own exertions for the position he shall occupy in the heap. Decidedly, then, 'scientific management' does not tend to the development of group solidarity within the shop.

"With the power of the individual weakened, and the chances lessened for the development of groups and group solidarity, the democratic possibilities of 'scientific management' barring the presence of unionism, would seem to be scant. The individual is manifestly in no position to cope with the employer on a basis of equality. Collective bargaining directly by the men employed is, under the circumstances, almost unthinkable. Unless, then, 'scientific management' has evolved and put into practice something to offset this manifest weakness of the individual and the shop group in their dealings with the employers, or holds itself ready to cooperate with unions outside, it can not by any stretch of the imagination be called democratic."

We were almost invariably informed that the workers had every opportunity of having their complaints or grievances fully considered and adjusted, and that the door to the general manager's office was always open to the workers who had failed to receive satisfaction from those holding subordinate managerial positions, but when efforts were made to discover how many workers have availed themselves of this privilege, the number was found to be practically zero.

GENERAL LABOR PROBLEMS ARISING FROM THE INTRODUCTION OF "SCIENTIFIC MANAGEMENT."

Under this heading the Hoxie report brings together the results of the whole investigation in regard to the general effects and tendencies of "scientific management" relative to labor. It is, therefore, the clearest and most concise statement that can be made. As the work on this section was submitted paragraph by paragraph to the experts, and it was modified by them in the process of making, it is in the nature of a joint product. On both accounts I feel justified in making my statement a condensation of this section.

Probably no one will dispute the statement that "scientific management" at its best greatly accelerates the modern tendency toward specialization of the workers. An example of this is afforded by the work of the machine operator, whose machine is not largely of the semiautomatic or automatic type.

Under the ordinary form of management found in industries, the machine operator is something more than a mere feeder of material into a machine, for he performs manual and mental labor as the result of his craft knowledge and skill, which is as essential to complete the product as is the work done by the machine. In addition to being a machine operator, he cares for the machine, corrects and repairs minor accidents, makes necessary adjustments, attends to the belting and grinds his own tools. He exercises also, within reasonable limits, and where there is a call for his initiative and dependence upon his craft knowledge, individual judgment in the laying out and setting up of a job, and in determining the method and the feed and speed to be employed in running the material through. Under "scientific management," on the other hand, in its fullest development, this same workman becomes a mere machine tender. All the extra work is done for him by a series of functional foremen or specialist workmen. The belting connected with the machine is cared for by a special functionary, the belt man; the tools which he uses are brought to him already ground by a specialist who does nothing else; his materials are always at hand, delivered by the move man, who also takes away the product. The laying out and setting up of the work, the feed and the speed to be used in doing it, and the mode of handling the material and putting it through the machine are determined by special functionaries and embodied in written instructions, except where the functional foreman is actually present to perform or assist in the initial operation or where the work is so thoroughly subdivided and repetitive that actual instructions are not deemed necessary, and though the worker may depart in some instances from the instructions given, he does so at the peril of the bonus, premium, or higher differential piece rate. Under the system fully developed, he is intended to be, and is, in fact, a machine feeder and a machine feeder only, with the possibility of auxiliary operations clearly cut off and with means applied to discourage experimentation. What applies to the machine feeder applies with more or less thoroughness to machine and hand operatives generally. Functional foremanship brings the managerial activity into every phase of the shop work. As Mr. Taylor says: "It effects a more equal division of the work between the management and the men by taking from the latter many of the activities which they were formerly obliged to perform."

But it is not merely in stripping from the job its auxiliary operations that "scientific management" tends to specialize the work and the workmen. Time study, the chief corner stone of all systems of "scientific management," tends inherently to the narrowing of the job or task itself. The chief function of time study is the analysis of work, the reduction of operations to their elementary motions and units, and the recombination of these elements into operations more quickly and easily performed. Doubtless time study thus may sometimes result in the discovery that new elements or operations may be added to former jobs with a distinct contribution to efficiency and economy, or that former operations may be efficiently combined. But as the final object of time study, as far as it directly touches the workers, is to make possible the setting of tasks so simple and uniform and so free from possible causes of interruption and variation that definite and invariable time limits can be placed upon them, and the worker may be unimpeded in his efficient performance of them by the necessity for questioning and deliberation, the preponderating tendency of time study is to split up the work into smaller and simpler operations and tasks. This tendency is not always apparent in "scientific management" shops, because sometimes, especially where these represent an old established machine industry, the specialization of work has already been carried to the extreme possible with the machinery in use. But time study furthers the invention of new machinery of a more automatic type and of machinery for the performance of former hand operations. An interesting side light was thrown upon this whole matter in one shop visited where time study for standardization and improvement had been especially emphasized. Here former handwork has been progressively converted into machine work, and the cycle of many operations in the particular job had become so short that the management has been unable to catch them accurately by means of the stop watch, and so despaired of being able to set tasks by means of elementary time study. Decidedly, then, time study tends to further the modern tendency toward specialization of the job and the task.

The inherent tendency to specialization is buttressed, broadened in its scope and perpetuated by the progressive gathering up and systematizing in the hands of the employers of all the traditional craft knowledge in the possession of the workers. With this information in hand, and functional foremanship to direct its use, "Scientific management" claims to have no need of craftsmen, in the old sense of the term, and, therefore, no need for an apprenticeship system except for the training of functional foremen. It therefore tends to neglect apprenticeship except for the training of the few. And as this accumulation of systematized knowledge in the hands of the employers grows, they are enabled to broaden the scope of its operation, to attack and specialize new operations, new crafts, and new industries, so that the tendency is to reduce more and more work to simple, specialized operations and more and more workers to the position of narrow specialists. Nor does "Scientifie management" afford anything in itself to check or offset this specialization tendency. The instruction and training offered is for specialist workmen. Selection and adaptation are specializing in their tendencies. Promotion is for the relatively few. The whole system, in its conception and operation, is pointed toward a universally specialized industrial régime.

The following editorial from a recent issue of the Interntional Molders' Journal attempts to describe the condition which is being created by "scientific management," as we found it in practice.

"MODERN INDUSTRY AND CRAFT SKILL.

"The one great asset of the wageworker has been his craftsmanship. We think of craftsmanship ordinarily as the ability to manipulate skillfully the tools and materials of craft or trade. But true craftsmanship is much more than this. The really essential element in it is not manual skill and dexterity, but something stored up in the mind of the worker. This something is partly the intimate knowledge of the character and uses of the tools, materials, and processes of the craft which tradition and experience have given the worker. But beyond this and above this, it is the knowledge which enables him to understand and overcome the constantly arising difficulties that grow out of variations, not only in the tools and materials, but in the conditions under which the work must be done.

"In the past, for the most part, the skillful manipulation of the tools and materials of a craft and this craftsmanship of the brain have been bound up together in the person of the worker and have been in his possession. And it is this unique possession of craft knowledge and craft skill on the part of a body of wageworkers—that is, their possession of these things and their employer's ignorance of them—that has enabled the workers to organize and force better terms from the employers. On this unique possession has depended more than on any other one factor the strength of trade unionism and the ability of unions to improve the conditions of their members.

"This being true, it is evident that the greatest blow that could be delivered against unionism and the organized workers would be the separation of craft knowledge from craft skill. For if the skilled use of tools could be secured from workmen apart from the craft knowledge which only years of experience can build up, the production of 'skilled workmen' from unskilled hands would be a matter in almost any craft of but a few days or weeks; any craft would be thrown open to the competition of an almost unlimited labor supply; the craftsman in it would be practically at the mercy of the employer.

"Of late, this separation of craft knowledge and craft skill has actually taken place in an ever widening area and with an ever increasing acceleration. Its process is shown in the two main forms which it has been taking. The first of these is the introduction of machinery and the standardization of tools, materials, product, and process, which makes production possible on a large scale and the specialization of the workmen. Each workman under such circumstances needs and can exercise only a little craft knowledge and a little craft skill. But he is still a craftsman, though only a narrow one and subject to much competition from below. The second form, more insidious and more dangerous than the first, but to the significance of which most of us have not yet become aroused, is the gathering up of all this scattered craft knowledge, systematizing it and concentrating it in the hands of the employer, and then doling it out again only in the form of minute instructions, giving to each worker only the knowledge needed for the mechanical performance of a particular relatively minute task. This process it is evident separates skill and knowledge even in their narrow relationship. When it is completed the worker is no longer a craftsman in any sense, but is an animated tool of the management. He has no need of special craft knowledge or craft skill, or any power to acquire them if he had, and any man who walks the street is a competitor for his job.

"There is no body of skilled workmen to-day safe from the one or the other of these forces tending to deprive them of their unique craft knowledge and skill. Only what may be termed frontier trades are dependent now on all around craftsmen. These trades are likely at any time to be standardized and systematized and to fall under the influence of this double process of specialization. The problem thus raised is the greatest one which organized labor faces. For if we do not wish to see the American workman reduced to a great semiskilled and perhaps little organized mass, a new mode of protection must be found for the working conditions and standards of living which unions have secured, and some means must be discovered of giving back to the worker what he is fast losing in the narrowing of the skill and the theft of his craft knowledge. It is another problem which the organized workmen must solve for themselves and for society.

"Under these circumstances the progressive degeneration of craftsmanship and the progressive degradation of skilled craftsmen seem inevitable."

In connection with the thoughts just expressed, I desire to submit another excerpt from the Hoxie report:

"'Scientific management,'" it says, "would seem to offer possibilities ultimately of better market control or better adaptation to market conditions, but the experience of the past year of depression indicates that at present no such possibilities generally exist.

"Finally, until unionism as it exists has been done away with or has undergone essential modification, 'Scientific management' can not be said to make for the avoidance of strikes, and the establishment of industrial peace. Mr. Taylor's statement that no strike has ever occurred under 'Scientific management' means simply that if a strike occurs, 'Scientific management,' in Mr. Taylor's conception of it, does not exist. Your investigator has discovered several well authenticated cases of strikes which have occurred in 'Scientific management' shops. He is inclined to believe that they are less frequent in this class of shops than elsewhere in similar establishments, owing largely to the fact that organized workmen are on the whole little employed. In its extension, however, it is certain that 'Scientific management' is a constant menace to industrial peace. So long as present-day unionism exists, and unionists continue to believe as they seem warranted in doing, that 'Scientific management' means the destruction of their organizations or their present rules and regulations, unionism will continue to oppose it energetically and whenever and wherever opportunity affords."

CONCLUSIONS.

Our purpose has been to describe the conditions affecting labor which were found in manufacturing establishments where "Scientific management" had been introduced rather than to discuss or attempt to analyze the theories of this new factor which is being introduced into the machinery of production. Our conclusions are drawn from evidence which was secured through personal observation of the investigators and the interviews which were held with efficiency experts, managers, and shopmen.

It is my opinion that the inequalities, variations, and contradictions which were found in establishments applying "Scientific management" were due:

1. To the employers' desire to apply just that portion of the theory and rules of "Scientific management" which they deemed most advantageous to themselves.
2. To the desire to secure the fullest output of their plant by the shortest cut and the lowest immediate labor cost.
3. To the employer's personal viewpoint as to his relationship and duties to the workers in his employ.
4. To the extent to which the employer's knowledge of the laws governing production was balanced by a knowledge of the laws of economics and sociology.
5. To the extent to which the autocratic spirit is balanced by the employer's conception of industrial democracy in formulating shop rules and establishing the terms of employment and the conditions under which labor is to be performed.

In talking with the workers in "Scientific management" shops were informed that the system tended to cause some workers to slight their work to the limit made possible by the degree of inspection which prevailed over them; that it tended to the passing of work which was a shade under the standard; that it tended to develop deliberate schemes to slight work on the part of some workers and often became a source of friction between workers, as the slighted work increased the labor of other workers.

Many of the workers interviewed held that "Scientific management":

1. Make the workers overexert themselves.
2. Creates shop jealousies.
3. Enables foremen, through collusion with the planning room, to play favorites.
4. Makes workers shirk work, leaving the task more difficult for those next in the line for the handling of the material.
5. Forces the high-grade workmen to often bear a large part of the burden of experiments and to work out new material without any adequate remuneration.

The evidence would indicate that, aside from the determination of machine speeds and the cutting speed of tools, time study is largely a matter of the time-study man's personal judgment, for he determines:

1. How many time studies shall be made on the job.
2. When the time studies shall be made.
3. Whether the tools, the material, and the equipment is in proper condition.
4. How many workers shall be timed on the job.
5. Who the workers shall be on whom time studies shall be made.
6. Whether they shall be the slowest, average, or speediest workers.
7. What elementary times shall be thrown out; that is, the number of longest and shortest times which will be discarded from the record before the time to be accepted shall be computed from the figures which remain.

It was fully demonstrated that one object of "Scientific management" was to specialize the work and divide it into the minutest subdivision possible, for the more thoroughly this was accomplished the more successfully the system could be operated from the employers' point of view and the shorter the period required to train new workers to perform the work.

Regardless of the form of payment, whether bonus, premium, or differential piecework, or any variation of these methods, the purpose is to stimulate the workers to accomplish the task which has been set for them by the time-study men, or the planning room. Without this stimulus the employers feel that the workers would not accomplish the task.

In the majority of instances there were no safeguards established to protect the workers from overexertion, but instead they were stimulated to work to the extent of their physical ability and instances were encountered where the methods applied aimed to secure the workers' limit of strength and exertion.

In the great majority of cases there was no system of training intended to develop young men into competent craftsmen, and in many instances the statement was made that the thoroughly trained mechanics or craftsmen were no longer required. Apprenticeship, except in one instance, had been wholly discontinued and in this establishment, employing hundreds of workers, but nine boys were being given an opportunity of learning a trade.

General manual skill was not being developed. The rule was to train workers in the use of but a few hand or machine tools. The workers were made familiar with the manual skill required to perform but a few of the operations necessary to complete the finished article.

Except for the skilled craftsmen required to perform work which as yet it has been impossible to subdivide, and which, therefore, required skill, long training, and craft judgment to accomplish, it was the practically unanimous opinion of shop managers that workers possessed of wide craft knowledge were no longer required. In hiring workers they seek for those who are familiar with but a few hand tools, one process or machine.

It was apparent that under "scientific management" the workers were made dependent upon the functional foremen and the planning room for craft and mechanical knowledge required in the establishment:

1. Because the workers were trained to become "one job and one operation" men.
2. Because when leaving one "scientific management" shop in which they had received their training as workmen, they became practically unskilled labor, unless they could secure employment at their own subdivided and restricted specialty in some other shop.
3. Because a broad industrial training had been denied them.

It was evident that collective bargaining or negotiations relative to terms of employment and conditions of labor between employer and workers had been eliminated, as the employers arbitrarily determined:

1. All shop rules.
2. The rate of wage.
3. Whether labor should be paid by the bonus, premium, differential piece system, or some modification of these.
4. What should be the time allowed for the performance of a task. or the accomplishing of a so-called standard of efficiency.
5. What the hours of labor should be.
6. What industrial education should be given to the workers.
7. What method would be established by which the individual workers might receive a hearing.
8. What should be the basis of hiring and the grounds for discharge.
9. What facilities would be provided for performing the work.
10. That the workers should be dealt with as individuals, and that there should be no collective bargaining between the employers and workers to determine the terms of employment and the conditions of labor.

After Mr. Hoxie's report had been examined and indorsed by Mr. Robert Valentine and myself, a brief statement was prepared by the three who had participated in the investigation which contained the conclusions which they had jointly reached.

My statement will be brought to a close by quoting the following, from these joint conclusions:

"Two essential points stand forth. The first point is that 'scientific management,' at its best and adequately applied, exemplifies one of the advanced stages of the industrial revolution which began with the invention and introduction of machinery. Because of its youth and the necessary application of its principles to a competitive state of industry, it is in many respects crude, many of its devices are contradictory of its announced principles, and it is inadequately scientific. Nevertheless, it is to date the latest word in the sheer mechanics of production and inherently in line with the march of events.

"Our industries should adopt all methods which replace inaccuracy with accurate knowledge and which systematically operate to eliminate economic waste. 'Scientific management' at its best has succeeded in creating an organic whole of the several departments of an institution establishing a coordination of their functions which had previously been impossible, and, in this respect, it has conferred great benefits on industry. The social problem created by 'scientific management' does not lie in this field. It is in its direct and indirect effects upon labor that controversy has arisen, and it was in this field that the investigation was principally made. For the present, the introducers and appliers of 'scientific management' have no influences to direct them, except where labor is thoroughly organized, other than their ideals, personal views, humanitarianism or sordid desire for immediate profit with slight regard for labor's welfare.

"The second point is that neither organized nor unorganized labor finds in 'scientific management' any adequate protection to their standards of living, any progressive means for industrial education, or any opportunity for industrial democracy by which labor may create for itself a progressively efficient share in efficient management. And, therefore, as unorganized labor is totally unequipped to work for these human rights, it becomes doubly the duty of organized labor to work unceasingly and unswervingly for them, and, if necessary, to combat an industrial development which not only does not contain conditions favorable to their growth, but, in many respects, is hostile soil."

Mr. NOLAN. I ask, before Mr. Frey concludes, that he be given an opportunity to go over his testimony here, and that the transcript be handed him and that he return it at the earliest possible date, so as to give him an opportunity to put in whatever other information he may have which he has not had an opportunity of presenting this afternoon.

Mr. KEATING. The witness may make such additions in his testimony as he feels is desirable, within reason, and as will develop his views. Of course, no material change will be made in the testimony given here, and in that connection, if the committee does not object, I would like to insert in the record a communication—a brief—I have received from the Metal Trades Association of Chicago, an employers' organization, containing an argument in opposition to this bill. The secretary of the organization wired me some days ago from Chicago for permission to present it, and at that time I thought the hearings would end on Saturday and so notified him and suggested that a brief be sent. The brief reached me, but I forgot to bring it with me this afternoon. I think the secretary of the committee has made similar promises to other organizations, and if it is agreeable to the committee, as these briefs come in, they will be made a part of the record.

It is essential that this record should be printed as soon as possible because we may have need of the record. Therefore, it is essential that the gentlemen who are revising their remarks should get them back here as soon as possible.

(The chairman (Mr. Keating) submitted the following brief, stating that it had been forwarded to him by the National Metal Trades Association, with headquarters in Chicago, Ill., with the request that it be made a part of the hearings:)

[John D. Hibbard, commissioner; Homer D. Sayre, secretary.]

NATIONAL METAL TRADES ASSOCIATION,
EXECUTIVE OFFICES, PEOPLES GAS BUILDING,
Chicago, Ill., April 1, 1916.

Hon. EDW. KEATING,
Acting Chairman House Committee on Labor,
House of Representatives, Washington, D. C.

DEAR SIR: Your telegram of March 31, advising me that your committee wishes to end the hearings on the Tavenner bill to-day (Apr. 1) and suggesting that we file our views in the form of a brief to be inserted in the record, and that a manuscript of not to exceed 5,000 words should be in your hands on or before Monday (Apr. 3) was received yesterday morning, and I immediately endeavored by telegraph to arrange for the presence of some of our members in Washington this morning. Telegraphic replies informed me that the time permitted us to appear was too short to allow necessary arrangements. Moreover, in order to get this letter to you by Monday, I am afraid I can not present the 5,000-word brief.

The National Metal Trades Association is deeply interested in the principles involved in the Tavenner bill, believing that the entire country would be vitally affected should such proposed legislation be adopted. Regardless of sophistical argument, we all believe in efficiency. The Government is demanding greater efficiency, not only in operations of the various functions of the Government, but in the development of our national resources, the operations of our great transportation lines, and the conduct of general business.

All over the country we are demanding a higher degree of technical skill in the management of State, county, and municipal affairs, and until there is a more general intelligent knowledge of just what true efficiency contemplates, not only in the production of so many tons of material, but also with due regard to the "human element"—for "efficiency" certainly does consider this element—the National Metal Trades Association believes it would be of infinite menace and most unwise to adopt ill-considered and half-baked legislation. It is believed that action by the Government along these lines would be followed by attempts by State legislation to control private business, precisely in the same way in which such proposed State legislation followed the action of the Government regarding the eight-hour day.

Perhaps in this very brief protest I can do no better than to quote a portion of a letter written by President Rice, of this association, to Senator Henry Cabot Lodge, as follows:

"My opinion of your great ability makes me feel that you would wish anyone to write you frankly. I therefore say that the letters I have seen from you show an entire lack of familiarity with what time studies, efficiency systems, and bonus and premium payments are.

"You would do well to visit a first-class shop working under such plans, or even the Government arsenals, before ill-advised legislation puts a stop to the work so well begun. I might even refer you to Gen. Crozier's admirable statement as to the work in his department, for I can not think you have carefully read it, or you would have a better idea of efficiency methods.

"In the first place, if there is objection to the use of the stop watch, why not the objection to the clock? It is true the hands do not stop when they reach 12 o'clock, but the whistle blows at the beginning and ending of work to mark the certain passage of time, and from the earliest manufacturer there has always been a standard, indefinite and vague, to be sure, as to the amount of work which should be accomplished during the hours of labor.

"Present-day efficiency methods differ not at all in principle but simply in the working out of this fact.

"In the first place, bonus and premium payments are made to those who can, by their personal efficiency and interest, equal or surpass the standard times in accordance with the different methods adopted for making payments, and the amount of the premium depends upon the efficiency of the man in exactly the same way as the testimony of a lawyer or the skill of a physician; it very soon becomes paid for by higher or lower fees, according to the relation of such skill to others.

"The use of the stop watch is not, as your replies would indicate you thought, a method of measuring the time it takes each workman to do his task. In a large factory of several hundred men there may be but one stop watch. It is used to determine the amount of time spent in the various movements performed by workmen in the operations under study.

"To illustrate very crudely, but I hope clearly, the report will show that in the 20 minutes, let us say, which was taken for the entire work on a given operation, 5 of these were used in setting up the piece in the machine; 5 were used in measuring and calipering the part to be sure too much was not being turned off, and to get it the exact size; and 10 were used in actual machine running time.

"Now, if the efficiency man and the tool designer in cooperation can work out a chuck which will enable the workman to put his piece immediately into its proper place in the machine absolutely central and true, the first 5 minutes might be cut to 1 minute, or even to 10 or 20 seconds. The cost of such a chuck is figured against the cost of the time saved and the number of pieces to be made, and it is decided scientifically and not by guesswork whether it pays to make such a chuck or to continue by the old method. Second, the 5 minutes used in measuring may likewise be reduced to a few seconds and perhaps eliminated altogether by putting permanent stops on the machine which will prevent the workman from boring too deep or turning too far.

"Against this saving of time is put the cost of this work and the setting up of the first piece of accuracy.

"In addition, the 10-minute time of actual operation may be split up into a study of how long it takes to get off a certain amount of metal by one depth of cut and a given travel as against other depths and travels, and a definite standard is set up for the workman to follow to indicate at which speed his machine will best perform the work.

"Now, without such studies, every workman will have his own standard, and perhaps set and grind his tools his own way. By the means of time studies it will be known which is the most efficient way to grind and set the tool for a given piece of work.

"That the workman himself benefits by such studies, into which he enters heartily when he correctly understands it, is obvious.

"There is again the use of the watch to determine the best way for the workman to perform certain operations and to obtain a standard mark at which to shoot. On a premium basis every workman gets his full day's wage, and a bonus is paid in addition if the mark is reached or exceeded. The bonus is in proportion to the result and is no different from a commission bonus to a salesman. The wages of the workman are his "drawing account" which is guaranteed.

"The payment of bonus and premium is likewise a matter of advantage to the men, both in point of pay and in finding their proper work. It is only the stupid and slow who object to being paid according to their ability, if we except the opposition of the labor unions, which is based—as is unfortunately the whole idea of unionism—on the dead level of bringing the poor man up and the better man down. Until labor unions recede from this position which they really uphold, although theoretically deny, they will fail to reach the high place which they ought to have.

"In fact, efficiency makes them healthy, happy, contented, and prosperous workmen and they are not only benefited individually, but collectively, because greater production in the world lessens cost, increases buying power and real wages."

Trusting that your committee may not favorably report out this bill until such time as a more exhaustive presentation of the case can be had, and thanking you for the courtesy which you extended us and for your telegram, I remain,

Very truly, yours,

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JNO. D. HIBBARD, *Commissioner.*

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